

Work-related well-being of emergency workers in Gauteng



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The objective of this study was to assess the relationships between occupational stress, sense of coherence, burnout and work engagement of emergency workers in Gauteng and to determine whether sense of coherence moderates the effects of occupational stress on burnout and work engagement. A cross-sectional survey design was used. A convenience sample ($N = 323$) was taken from emergency workers in Gauteng. The Maslach Burnout Inventory – Human Services Survey, the Utrecht Work Engagement Scale, the Emergency Worker Stress Inventory and the Orientation to Life Questionnaire were administered. The results showed that occupational stress (as a result of a lack of job resources) and a weak sense of coherence predicted emotional exhaustion and depersonalisation. Sense of coherence predicted personal accomplishment and work engagement. However, sense of coherence did not moderate the effects of occupational stress on emotional exhaustion, depersonalisation, personal accomplishment or work engagement.

Keywords: burnout; emergency workers; occupational stress; sense of coherence; work engagement;

Emergency work is widely recognised as stressful (Beaton, Murphy, Pike, & Corneil, 1997; Moran & Britton, 1994; Young & Cooper, 1995). Emergency workers (including fire-fighters, ambulance drivers, emergency staff and paramedics) are often confronted with extremely stressful and demanding situations. According to Vettor and Kosinski (2000), emergency workers constantly face chronic stressors, such as having to deal with injury, mutilation and even death. Frank and Ovens (2002) point to the fact that emergency work is both rewarding and demanding in that little control over

patient-mix exists, compounded by the fact that life and death decisions have to be made quickly. In South Africa, the context is not much different. In a survey conducted by the Work Trauma Foundation in South Africa, emergency workers (i.e., ambulance personnel, technical assistants and hospital personnel) indicated safety concerns as well as physical and verbal abuse as major stressors in their jobs (Smith, 2003). This highly stressful environment often results in an increased risk of injury, cardiovascular disease and other health problems, psychological health disorders and burnout (Kowalski & Vaught, 2001).

According to Schaufeli and Bakker (2001), some individuals, regardless of high job demands and long working hours, show no symptoms of burnout. On the contrary, they seem to find pleasure in working hard and dealing with job demands. From a positive psychology perspective (Seligman & Csikszentmihalyi, 2000), such individuals could be described as engaged in their work. The focus on engagement as the positive antithesis of burnout promises to yield new perspectives on interventions to promote healthy perceptions, beliefs and physical well-being (Salovey, Rothman, Detweiler, & Stewart, 2000) and to alleviate burnout (Maslach, Schaufeli, & Leiter, 2001). To assume the presence of positive attitudes toward work (e.g., work engagement) by observing the absence of negative aspects (e.g., burnout), or vice versa, is a simplistic approach to understanding well-being at work. Therefore, burnout and work engagement should be studied together in order to gain a better understanding of work-related well-being (Rothmann, 2003). Based on the holistic model of work wellness (Nelson & Simmons, 2003), burnout and work engagement could be regarded as forms of distress and eustress respectively. This model incorporates a broad range of stressors and individual difference variables that may be salient for cognitive appraisal and coping.

Even though the effect of an often highly stressful environment on the well-being of the individual emergency worker is widely recognised and well documented in the emergency work literature, very little research in this regard has been undertaken in South Africa. This is particularly true if one considers the apparent paucity of research in this context from a positive work-related well-being perspective. It would therefore seem that the present study is much needed. The objective of this study was to assess the relationships between occupational stress, sense of coherence, burnout and work engagement of emergency workers in Gauteng and to determine whether sense of coherence moderates the effects of occupational stress on burnout and work engagement.

BURNOUT AND WORK ENGAGEMENT

Schaufeli and Enzmann (1998, p. 36) define burnout as follows: ‘Burnout is a persistent, negative, work-related state of mind in “normal” individuals that is primarily characterized by exhaustion, which is accompanied by distress, a sense of reduced effectiveness, decreased motivation and the development of dysfunctional attitudes

and behaviours at work.’ The Maslach Burnout Inventory – Human Services Survey (MBI-HSS) was designed to measure burnout of people working in the human services by means of three subscales, namely Emotional Exhaustion, Depersonalisation and reduced Personal Accomplishment. *Emotional Exhaustion* refers to a lack of energy and a feeling that emotional resources are depleted, whereas *Depersonalisation* refers to the treatment of recipients of services in a negative, cynical, detached and emotionally callous manner. *Reduced Personal Accomplishment* refers to negative self-evaluation, the belief that objectives are not reached, as well as poor professional self-esteem and beliefs of insufficiency on the part of the service provider.

The notion of emotional exhaustion presupposes a prior state of high arousal or overload rather than one of low arousal or underload, which implies that burnout is not a response to tedious, boring or monotonous work (Schaufeli, 2003). However, emotional exhaustion fails to capture a critical aspect of the relationship people have with their work. Chronic exhaustion can lead people to distance themselves emotionally and cognitively from their work, so that they are less involved with, or responsive to, the needs of other people or the demands of the task. According to Maslach (1998), distancing is such an immediate reaction to exhaustion that a strong relationship from emotional exhaustion to depersonalisation is found consistently in burnout research. Furthermore, a work situation with chronic, overwhelming demands that contribute to emotional exhaustion or cynicism is likely to erode an individual’s sense of accomplishment or effectiveness. Also, it is difficult to gain a sense of accomplishment when feeling exhausted and/or when helping people toward whom one is feeling negative (Schaufeli & Enzmann, 1998).

Work engagement is defined as a positive, fulfilling, work-related state of mind that is characterised by vigour, dedication and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002). Furthermore, it is not a momentary and specific state, but a more persistent and pervasive affective-cognitive state which is not focused on a particular object, event, individual or behaviour. *Vigour* is characterised by high levels of energy and mental resilience while working, the willingness to invest effort in one’s work, not being easily fatigued and the ability to persist even in the face of difficulties. *Dedication* is characterised by deriving a sense of significance from one’s work, by feeling enthusiastic, inspired and proud and by viewing it as a challenge. *Absorption* is characterised by being totally and happily immersed in one’s work – to the extent that it is difficult to detach oneself from it. Absorption most likely plays a less central role in the engagement concept.

Given the fact that burnout and engagement are indicators of wellness of employees at work, Schaufeli and Bakker (2004) suggest that they could be combined in a model of well-being. These authors utilise a theoretical analysis and identify two underlying dimensions of work wellness: (a) activation, ranging from exhaustion to vigour and (b) identification, ranging from cynicism to dedication. Theoretically speaking, burnout is then characterised by a combination of exhaustion (low activation) and mental

distance (low identification), whereas engagement is characterised by vigour (high activation) and dedication (high identification). Accordingly, vigour and dedication are considered direct opposites of exhaustion and mental distance respectively.

OCCUPATIONAL STRESS

In the majority of stress theories and models, occupational stress is described as a series of factors that have their beginnings in one's actual surroundings and that conclude with the individual's reactions. The individual forms a conception of the objective situation through his or her subjective interpretation of the situation (Beehr, 2000). The stress process involves an interaction between the individual and the environment, where the discrepancy between an individual's perceived threats and the resources he or she sees as available for facing the threats leads to the experience of occupational stress (Cooper, 2000). By means of weighing the demands/threats against the available resources, an individual makes an evaluation of the situation and forms an impression of its significance. This appraisal is then followed by immediate reactions. Both appraisals of and reactions to, a given situation vary from individual to individual due to, for example, individual characteristics (Cooper, 2000).

The Transactional Process Model (Lazarus, 1991) and the Spielberger State-Trait (STP) model of occupational stress (Spielberger, Vagg, & Wasala, 2003) conceptualise stress as a complex process that consists of three major components, namely: (a) sources of stress that are encountered in the work environment, (b) perception and appraisal of a particular stressor by an employee and (c) the emotional reactions that are evoked when a stressor is appraised as threatening. The STP model of *occupational stress* focuses on the perceived severity and frequency of occurrence of two major categories of stressor events, namely job pressures and lack of support (Spielberger et al., 2003). The STP model recognises the importance of individual differences in personality traits in determining how workplace stressors are perceived and appraised. According to the STP model, occupational stress is defined as the mind–body arousal resulting from the physical and/or psychological demands associated with the job. The appraisal of a stressor as threatening leads to the emotional arousal of anxiety and anger and the associated activation of the autonomic nervous system. If severe and persistent, the resulting physical and psychological strain may have adverse behavioural consequences (Spielberger et al., 2003). According to Spielberger et al. (2003), employees evaluate their work environment in terms of the severity and frequency of occurrence of specific job demands and pressure and the level of support provided by supervisors, co-workers and organisational policies and procedures. Failure to take the frequency of occurrence of a particular stressor into account may contribute to overestimating the effects of highly stressful situations that rarely occur, while underestimating the effects of moderately stressful events that are frequently experienced.

Research has shown relationships between emotional exhaustion, on the one hand and physical workload (Schaufeli & Enzmann, 1998), poor environmental conditions

(Friedman, 1991), demanding clients (Leiter & Maslach, 1988), time pressure and unfavourable shift work schedules (Kandolin, 1993), on the other hand. Findings also indicate a relationship between a lack of job resources and depersonalisation. Job resources refer to performance feedback (Åström, Nilsson, Norberg, Sandman, & Winblad, 1990), rewards (Landsbergis, 1988), job security (Dekker & Schaufeli, 1995), job control (Landsbergis, 1988), participation in decision-making (Jackson, Turner, & Brief, 1987) and support from supervisors (Leiter, 1989). Recently, a multi-sample study confirmed the mediating effect of burnout on the job demands–health outcome relationship (Schaufeli & Bakker, 2004). Consequently, in terms of the present study, emotional exhaustion and depersonalisation are expected to be predicted by stress as a result of job demands and a lack of job resources.

In a qualitative study of the stressors experienced by emergency workers (i.e., ambulance and rescue services) in a South African coastal city, Sparrius (1992) found that 15 of the 19 stressors identified could be attributed to organisation-based factors. These stressors included the experience of the structure of the organisation as paramilitary, managerial favouritism and a lack of motivation, which resulted in conflict and communication problems between management and employees. Other individual stressors identified were: interaction with patients, unexciting tasks, slow shifts, physical danger in terms of geographical location, physical and verbal abuse from bystanders, lack of equipment, travelling long distances, shift-work, meeting deadlines and administrative work. Some interpersonal stressors were: clashing personalities at work, colleagues not accepting change and pettiness among colleagues.

Young and Cooper (1995) conducted a study in England to assess occupational stress amongst a group of ambulance and fire services personnel. The results showed that, for the ambulance group, significantly more stress was reported for factors intrinsic to the job, career and achievement, as well as organisational structure and climate than for the normative group. The significant differences in perceived stress were only found for the fire-fighter group in terms of their relationship with others. Analysis of variance revealed that organisational structure and climate were perceived as more stressful for the ambulance sample, whereas relationships with others produced more stress for the fire-fighter sample.

SENSE OF COHERENCE

The literature mentions many possible buffers that could aid the employee against occupational stress (Cooper, Dewe, & O'Driscoll, 2001). Work-related well-being does not solely reside within the environment or the individual; it is the result of a dynamic transaction between the constituting elements of the environment and the individual's cognitive processes.

In this study, the main and moderator effects of a sense of coherence on emergency workers' experience of burnout and work engagement are investigated. Sense of coherence may either alleviate or aggravate reactions to a stressor. It can be described

as a pervasive, enduring, yet dynamic feeling of confidence that one's internal and external environments are predictable and that there is a high probability that things will work out as well as can reasonably be expected (Antonovsky, 1993). The definition of *sense of coherence* includes three dimensions, namely (a) comprehensibility, (b) manageability and (c) meaningfulness (Antonovsky, 1987). Sense of coherence is a general coping resource presumed to alleviate life stress by affecting the overall quality of cognitive and emotional appraisal of stimuli that impact on the individual. A strong sense of coherence is negatively related to measures of negative affectivity, such as anxiety and neuroticism (Frenz, Carey, & Jorgenson, 1993) and job stress (Feldt, 1997). A strong sense of coherence is positively related to competence and life satisfaction (Kalimo & Vuori, 1990) and general well-being (Feldt, 1997).

Amirkhan and Greaves (2003) studied three mechanisms that could underlie the health-promoting benefits of sense of coherence, namely (a) perceptual, (b) cognitive and (c) behavioural mechanisms. They showed that a strong sense of coherence impacts on perception, such that individuals with a strong orientation were likely to view more life events as having coherence. This perceptual process seems to be subtle: it influences individuals' perceptions of stressful events, but it does so without their conscious awareness. Evidence of a behavioural influence was also obtained: individuals with a strong sense of coherence used more instrumental and fewer avoidant responses to cope with stressors in their lives (Amirkhan & Greaves, 2003). As far as the cognitive dimension is concerned, sense of coherence does not appear to influence individuals' attributions, that is, individuals with a strong sense of coherence (compared with those with a weak sense of coherence) did not make different attributions (Amirkhan & Greaves, 2003).

Levert, Lucas and Ortlepp (2000) reported significant correlations between two components of burnout ((a) emotional exhaustion and (b) depersonalisation) and sense of coherence in a group of psychiatric nurses in South Africa. Gilbar (1998) found significant correlations between social workers' sense of coherence and emotional exhaustion ($r = -0.30$), as well as between their sense of coherence and personal accomplishment (0.34). Rothmann, Malan and Rothmann (2001) also found that sense of coherence correlated with emotional exhaustion (-0.56), depersonalisation (-0.41) and personal accomplishment (0.48).

Sense of coherence might moderate the impact of occupational stressors on the individual's affective outcomes (e.g., burnout and work engagement). This means that the impact of stressful experiences would vary for individuals between high and low-scoring individuals on sense of coherence (Bolger & Zuckerman, 1995; Cooper et al., 2001). Moderator variables affect the direction and/or strength of the relation between independent (predictor) variables and dependent (criterion) variables (Baron & Kenny, 1986). A moderator variable exerts influence as a third variable on the zero-order (main effect) correlation between two other variables.

Consequently, the following research hypotheses were formulated:

- H1: Occupational stress as a result of job demands and a lack of job resources predicts emotional exhaustion and depersonalisation.
- H2: Sense of coherence has a main effect on the exhaustion, cynicism, personal accomplishment and work engagement of emergency workers.
- H3: Sense of coherence moderates the effects of occupational stress on burnout and work engagement.

METHOD

Research design

A cross-sectional survey design was used to test the above hypotheses.

Participants

A convenience sample of emergency workers in the different regions of Gauteng, namely the West Rand, Ekurhuleni, Sedibeng, Johannesburg Metropolitan, Tshwane, Kungwini and Nokeng Tsa Taemane was taken. The total population of about 2 100 emergency workers in Gauteng was targeted to complete the self-administered questionnaire, which was administered in the various regions throughout Gauteng. A total of 454 questionnaires were received (which represents a response rate of 22%). The reason for this relatively low volunteer response rate was that many employees were unavailable because of call-outs, shift schedules, illness, absenteeism and leave. Only 323 responses (71%) could be used – primarily because of incomplete questionnaires. Descriptive information for the sample is given in Table 1.

The sample consisted mainly of Afrikaans- and Sotho-speaking emergency workers (80%). They were mostly married men (80%) with a tertiary education (diploma), a mean age of 33.13 years ($SD = 8.08$) and length of service of 9.68 years ($SD = 6.88$).

Instruments

The Maslach Burnout Inventory – Human Services Survey (MBI-HSS) (Maslach & Jackson, 1986) measures respondents' perceived experience of burnout in relation to the recipients of their service, care or treatment. The MBI-HSS consists of 22 self-scored items on a seven-point frequency scale ranging from 0 (never) to 6 (every day). Three subscales can be identified, namely Emotional Exhaustion (nine items; e.g., 'I feel emotionally drained from my work'), Depersonalisation (five items; e.g., 'I feel I treat some recipients as if they were impersonal objects') and Personal Accomplishment (eight items; e.g., 'I have accomplished many worthwhile things in this job'). Naudé and Rothmann (2004a) confirmed the three-factor structure of the MBI-HSS in this sample through confirmatory factor analysis. Satisfactory Cronbach alphas were reported for all the subscales, namely Emotional Exhaustion ($\alpha = 0.77$), Depersonalisation ($\alpha = 0.68$) and Personal Accomplishment ($\alpha = 0.78$).

Table 1. Characteristics of the participants ($N = 323$)

Item	Category	<i>N</i>	Percentage
Home language	Afrikaans	145	45
	English	65	20
	Sotho*	113	35
Position	Management	55	17
	Medical specialists	16	5
	Emergency medical technicians	233	72
	Support services	19	6
Area	West Rand	39	12
	Ekurhuleni	152	47
	Sedibeng	55	17
	Johannesburg Metro	32	10
	Tshwane	29	9
	Kungwini	13	4
	Nokeng Tsa Taemane	3	1
Education	Grade 11 or below	39	12
	Grade 12	65	20
	Tertiary education: diploma	149	46
	Tertiary education: degree	71	22
Gender	Male	258	80
	Female	65	20

***Note:** Sotho refers to Sepedi, Sesotho and Setswana speakers

The Utrecht Work Engagement Scale (UWES) (Schaufeli et al., 2002) measures levels of engagement. The UWES is scored on a seven-point frequency scale ranging from 0 (never) to 6 (every day). Naudé and Rothmann (2004b) confirmed a two-factor model of work engagement by using confirmatory factor analysis in this sample. The factors included Vigour/Dedication (7 items; e.g., ‘I am bursting with energy in my work’; ‘I find my work full of meaning and purpose’) and Absorption (5 items; e.g., ‘Time flies when I’m working’). Cronbach alpha coefficients were found to be acceptable for the Vigour/Dedication subscale ($\alpha = 0.87$), but not for the Absorption subscale ($\alpha = 0.61$) in a sample of emergency workers in South Africa (Naudé & Rothmann, 2004b).

The Emergency Worker Stress Inventory (EWSI) was used to measure occupational stress and was developed by Naudé and Rothmann (2003) for emergency workers in Gauteng. The EWSI consists of 78 items scored on a frequency and intensity scale. In the first part of the questionnaire, participants rate each of the 39 statements in terms of perceived intensity of the particular stressor on a nine-point scale ranging from 1 (low) to 9 (high). In the second part of the questionnaire, the participants are requested to respond in terms of perceived frequency in experiencing the same stressors over a period of the past six months on a ten-point scale ranging from 0 (no days) to 9+ (more than 9 days). Principal component extraction with an oblimin rotation resulted in two moderately related factors ($r = 0.26$) in this sample, namely Job Demands/Pressure (e.g., working overtime, assignment of new or unfamiliar duties and dealing with crisis situations) and Lack of Job Resources (e.g., lack of opportunity for advancement, fellow workers not doing their job and inadequate support by supervisor) (Naudé & Rothmann, 2003).

The Orientation to Life Questionnaire (OLQ) (Antonovsky, 1987) was used to measure participants' sense of coherence. The OLQ consists of 29 items. Antonovsky (1993) reported alpha coefficients of the OLQ in 29 research studies – varying between 0.85 and 0.91. Test-retest reliability studies reported coefficients between 0.41 and 0.97. Rothmann (2000) reported an alpha coefficient of 0.89 for the OLQ. Regarding the construct validity of the OLQ, it was found that there was a negative relationship between the OLQ and experienced stress and that the OLQ correlated negatively with the State Trait Anxiety Inventory-Trait and the Beck Depression Inventory (Frenz et al., 1993).

Ethics

Considerations regarding ethical issues were addressed by means of active inclusion and consultation with the relevant stakeholders at the Department of Health (Gauteng), as well as with the participants in the study. Participation was voluntary. Objectives of the study were explained to the participants and written consent obtained from them at their place of work where the data collection also took place. Both individual and group feedback was provided for in the design of the study. Confidentiality and anonymity were assured.

Statistical analysis

The statistical analysis was carried out with the SPSS Program (SPSS Inc., 2003). Descriptive statistics were used to explore the data. Exploratory factor analyses and Cronbach alpha coefficients were then computed to assess the validity and reliability of the constructs that were measured.

Two types of regression analyses were used in this study. First, standard multiple regression analyses were used to investigate the main effects of occupational stress and

sense of coherence on burnout and work engagement. Second, a two-step hierarchical multiple regression analysis was conducted with the variables in their continuous form. In the first step, the predictor (i.e., Job Demands/Pressure) and moderator (i.e., Sense of Coherence) were entered into the regression equation, followed by their interaction in the second step. The interaction term is represented by the product of the two main effects (i.e., Job Demands/Pressure × Sense of Coherence) (Aiken & West, 1991). Also, in line with these authors the independent variable and the moderator were centred before testing for the significance of the interaction term. To centre a variable, scores are put into deviation score form by subtracting the sample mean from all individuals' scores on the variable, thus producing a revised sample mean of zero.

RESULTS

The descriptive statistics and Cronbach alpha coefficients of the MBI-HSS, UWES, EWSI and OLQ are presented in Table 2.

Table 2. Descriptive statistics and alpha coefficients of the MBI-HSS, UWES, EWSI and OLQ (*N* = 323)

Item	Mean	SD	Skewness	Kurtosis	α
Emotional exhaustion	26.59	10.26	-0.08	-0.30	0.79
Depersonalisation	13.67	6.43	0.01	-0.44	0.68
Personal accomplishment	32.11	8.22	-0.40	-0.24	0.78
Work engagement	29.09	8.93	-0.75	0.23	0.89
Lack of job resources	83.86	22.17	-0.46	-0.04	0.88
Job demands/Pressure	36.58	11.93	-0.01	-0.47	0.82
Sense of coherence	48.33	8.71	-0.68	0.45	0.89

Table 2 shows that the scores on the MBI-HSS, UWES, EWSI and OLQ are relatively normally distributed (skewness and kurtosis are smaller than one). Regarding the Cronbach alpha coefficients, all subscales of the measuring instruments are considered acceptable in terms of Nunnally and Bernstein's (1994) guideline, except for the Depersonalisation subscale of the MBI-HSS. It appears that the MBI-HSS, EWSI and OLQ have acceptable levels of internal consistency.

The product-moment correlation coefficients between the MBI-HSS, UWES, EWSI and OLQ are reported in Table 3.

Table 3. Product–moment correlation coefficients between the scales (N = 323)

		1	2	3	4	5	6
1.	Emotional Exhaustion	–	–	–	–	–	–
2.	Depersonalisation	0.46*	–	–	–	–	–
3.	Personal accomplishment	-0.12	-0.15*	–	–	–	–
4.	Work engagement	-0.28*	-0.32*	0.61*	–	–	–
5.	Lack of job resources	0.40*	0.32*	0.04	-0.12	–	–
6.	Job demands/Pressure	0.21*	0.25*	0.03	-0.08	0.54*	–
7.	Sense of coherence	-0.28*	-0.29*	0.38*	0.41*	-0.13	-0.11

* Correlation is significant at the 0.01 level (2-tailed).

From Table 3, it is evident that Emotional Exhaustion is significantly positively related to Depersonalisation, Lack of Job Resources and Job Demands/Pressure; Emotional Exhaustion and Depersonalisation are significantly negatively related to Work Engagement and Sense of Coherence; Personal Accomplishment is significantly positively related to Work Engagement and Sense of Coherence; and Work Engagement is significantly positively related to Sense of Coherence.

To assess whether occupational stress and sense of coherence predict burnout and work engagement of emergency workers, a series of standard multiple regression analyses were carried out. The results of standard multiple regression analyses, with occupational stress (Job Demands/Pressure and Lack of Resources) and Sense of Coherence as independent variables and Emotional Exhaustion, Depersonalisation, Personal Accomplishment and Work Engagement respectively as dependent variables, are reported in Table 4.

Table 4 shows that job stress and sense of coherence explained 21% ($R^2 = 0.21$) and 17% ($R^2 = 0.17$) of the variance in Exhaustion and Depersonalisation respectively. Stress, Lack of Job Resources and Sense of Coherence were the only two statistically significant predictors of Emotional Exhaustion and Depersonalisation ($p < 0.01$). Hypothesis 1 is therefore partially accepted. Furthermore, the results of the multiple regression analysis with Personal Accomplishment and Work Engagement as dependent variables showed that the regression coefficients of Stress, Lack of Resources and Job Demands/Pressure were not statistically significant. Furthermore, Sense of Coherence was the only statistically significant predictor of both Personal Accomplishment and Work Engagement, explaining 15% ($R^2 = 0.15$) and 18% ($R^2 = 0.18$) of the variance respectively. Sense of Coherence demonstrated a main effect on all the components of work-related well-being. Hypothesis 2 is therefore accepted.

Next, the possible moderating effects of sense of coherence were tested on the positive (i.e., Personal Accomplishment, Work Engagement) and negative (i.e.,

Table 4. Standard multiple regression analyses (*N* = 323)

Variable	Unstandardised Coefficients		<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i> ²
	<i>B</i>	<i>SE</i>				
Emotional exhaustion					28.09*	0.21
(Constant)	15.46	2.55	6.06	–		
Lack of Job Resources	0.12	0.02	6.32	0.00*		
Job Demands/Pressure	-0.01	0.03	-0.28	0.78		
Sense of Coherence	-0.07	0.02	-4.59	0.00*		
Depersonalisation					21.84*	0.17
(Constant)	12.49	2.16	5.79	–		
Lack of Job Resources	0.06	0.02	3.91	0.00*		
Job Demands/Pressure	0.04	0.03	1.45	0.15		
Sense of Coherence	-0.06	0.01	-4.88	0.00*		
Personal accomplishment					18.75*	0.15
(Constant)	5.12	2.34	2.19	–		
Lack of Job Resources	0.02	0.02	1.09	0.28		
Job Demands/Pressure	0.02	0.03	0.62	0.54		
Sense of Coherence	0.11	0.01	7.46	0.00*		
Work Engagement					22.40*	0.18
(Constant)	10.66	3.46	3.08	–		
Lack of Job Resources	-0.03	0.03	-1.23	0.22		
Job Demands/Pressure	0.01	0.05	0.16	0.87		
Sense of Coherence	0.16	0.02	7.84	0.00*		

* *p* < 0.01

Emotional exhaustion, Depersonalisation) components of work-related well-being of emergency workers. The predictor and moderator main effects were entered into the regression equation first, followed by the interaction of the predictor and the moderator. The results of a series of hierarchical multiple regression analyses with Emotional Exhaustion, Depersonalisation, Personal Accomplishment and Work Engagement respectively as dependent variables are reported in Table 5.

Table 5. Hierarchical regression analyses to test the moderating effect of a sense of coherence ($N = 323$)

Emotional Exhaustion	F	R²	Emotional Exhaustion	F	R²
Lack of Job Resources, Sense of Coherence	42.20	0.21	Lack of Job Resources, Sense of Coherence and Interaction term	28.06	0.21
Job Demands/Pressure, Sense of Coherence	9.74	0.11	Job Demands/Pressure, Sense of Coherence and Interaction term	13.14	0.11
Depersonalisation			Depersonalisation		
Lack of Job Resources, Sense of Coherence	31.59	0.17	Lack of Job Resources, Sense of Coherence and Interaction term	21.07	0.17
Job Demands/Pressure, Sense of Coherence	24.01	0.13	Job Demands/Pressure, Sense of Coherence and Interaction term	16.00	0.13
Personal Accomplishment			Personal Accomplishment		
Lack of Job Resources, Sense of Coherence	27.98	0.15	Lack of Job Resources, Sense of Coherence and Interaction term	18.60	0.15
Job Demands/Pressure, Sense of Coherence	27.50	0.15	Job Demands/Pressure, Sense of Coherence and Interaction term	18.35	0.15
Work Engagement			Work Engagement		
Lack of Job Resources, Sense of Coherence	33.69	0.18	Lack of Job Resources, Sense of Coherence and Interaction term	22.46	0.18
Job Demands/Pressure, Sense of Coherence	32.78	0.17	Job Demands/Pressure, Sense of Coherence and Interaction term	21.93	0.17

It is clear from Table 5 that the R^2 did not increase when the interaction terms between various variables (e.g., Lack of Job Resources/Job Demands and Sense of Coherence) were entered. Furthermore, the interaction terms were not statistically significant in any of the cases. Therefore, even though Sense of Coherence had a main effect in each of the cases, it did not interact with occupational stress to affect burnout or work engagement. Hypothesis 3 is therefore rejected.

DISCUSSION

The study set out to assess the relationships between occupational stress, sense of coherence, burnout and work engagement of emergency workers in Gauteng, using a cross-sectional survey design in a sample of 323 emergency workers in South Africa. Occupational stress due to a lack of job resources and a weak sense of coherence contributed significantly to emotional exhaustion and depersonalisation. Furthermore, a strong sense of coherence had a main effect on personal accomplishment and work engagement, but no interactions were observed between occupational stress and sense of coherence.

We hypothesised that occupational stress due to job demands and a lack of job resources contributes to emotional exhaustion and depersonalisation. The results confirmed this hypothesis. The correlations obtained in this study (see Table 2) showed that emergency workers who experience stress because of job demands (e.g., working overtime, assignment of new or unfamiliar duties, dealing with crisis situations and assignment of increased responsibility) also experience emotional exhaustion and depersonalisation. However, stress as a result of a lack of job resources (e.g., lack of opportunity for advancement, fellow workers not doing their job, inadequate support by supervisor and lack of recognition for good work) was the best predictor of both emotional exhaustion and depersonalisation (see also the findings of Rothmann, Steyn & Mostert, 2005). One possible explanation for this finding is that stress as a result of a lack of resources was relatively severe for emergency workers, which could have contributed to emotional exhaustion and depersonalisation. Alternatively, it is also possible that job demands did not predict exhaustion and depersonalisation when it was entered in the regression analyses for the reason that it shared a relatively large percentage of the variance (29%) with stress as a result of a lack of resources.

While occupational stressors seemed to contribute to distress of emergency workers (as indicated by emotional exhaustion and depersonalisation), they were not related to personal accomplishment and work engagement. Schaufeli and Bakker (2004) showed that personal accomplishment and work engagement formed part of an extended engagement factor, while emotional exhaustion and depersonalisation formed part of a burnout factor. However, the results of this study showed that burnout (emotional exhaustion and depersonalisation) was moderately related to work engagement. Therefore, occupational stress could possibly impact on work engagement through its effect on burnout (emotional exhaustion and depersonalisation).

Emergency workers with a strong sense of coherence were found to experience less burnout and more work engagement – presumably because they are predisposed to experiencing stimuli from the environment in a positive manner. They could also perceive stimuli as making sense on a cognitive level, feel themselves to be in control of events by means of support networks and view events as motivationally relevant and meaningful. This result is consistent with previous findings (e.g., Basson & Rothmann, 2002; Schaufeli & Bakker, 2004; Wissing, de Waal, & de Beer, 1992). Emergency workers who have a weak sense of coherence probably find it difficult to structure their world to be understandable, orderly and consistent. They tend to experience life events as unmanageable and perceive themselves as lacking in resources to meet demands; they might also feel that life does not make sense on an emotional level (Antonovsky, 1987). It is understandable that they would perceive situations as stressful.

It should be noted that the availability of job resources (i.e., when distress regarding their job resources is low) and personal resources (i.e., when the sense of coherence is strong) seems to play an important role in emergency workers' experience of both burnout and work engagement. The Conservation of Resources theory of Hobfoll

(2001) regards resources as more important than demands. According to Hobfoll, burnout and low work engagement result because of a failure to acquire sufficient resources. Individuals with better job and personal resources are less vulnerable to resource loss and more able to acquire resources. The reverse is also true: individuals with fewer resources are more vulnerable to resource loss and less able to acquire resources. Sense of coherence is regarded as a broadband resource, while burnout and low work engagement might result because of a lack of resources.

In this study, occupational stress showed a weak relationship with personal accomplishment. Relatively low correlations of professional efficacy were observed with emotional exhaustion and depersonalisation, whereas these two burnout dimensions correlated relatively strongly (see also Lee & Ashforth, 1996). However, this might reflect an artefact, because if all originally positively phrased MBI Personal Accomplishment items are rephrased negatively, correlations with exhaustion and cynicism increase substantially (Bouman, Te Brake, & Hoogstraten, 2002). Sense of coherence was the only variable in this study that was related to personal accomplishment. Several authors have argued that personal accomplishment reflects a personality characteristic rather than a genuine burnout component (Cordes & Dougherty, 1993; Shirom, 1989). Sense of coherence is also regarded as a personality disposition (Antonovsky, 1987).

Limitations of the present study include the use of a cross-sectional survey design, which makes it difficult to prove causal relationships. A longitudinal design is necessary to test causal relationships. Another limitation is the exclusive use of self-report measures, a strategy often associated with method variance. Sample size and sampling method are further limitations. Only emergency workers in Gauteng were included in the study and an availability sampling method was used. Consequently, the results cannot be generalised to the total population or the emergency workers in other provinces.

IMPLICATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The occupational stress of emergency workers should be managed carefully by the organisation so as to prevent burnout. The development of burnout seems to start with a gradual depletion of the emotional resources of the emergency worker, followed by the development of cynical attitudes towards recipients of their service and the treatment of recipients as impersonal objects. This could, for the most part, be attributed to a lack of job resources for the emergency worker and a weak sense of coherence. It is therefore recommended that the organisation should provide adequate resources for emergency workers to prevent distress, but also that it considers the level of emergency workers' sense of coherence to promote eustress. Furthermore, despite the various demands and negative consequences often associated with emergency work, higher levels of sense of coherence could aid emergency workers in understanding their contribution, elevating their level of belief that they will be able to manage,

encouraging them to identify with their work and enhancing their ability to see their work as a challenge worthy of energy investment.

Future research should focus on the development of a causal model of work-related well-being of emergency workers (with the inclusion of occupational stress and psychological well-being) by using a longitudinal research design.

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