

Occupational stress, organisational commitment, and ill-health of educators in the North West Province

Leon Jackson and Sebastiaan Rothmann

bsoltbj@puk.ac.za; bpksr@puk.ac.za

The objectives were to analyse the occupational stress of educators, to determine the differences between occupational stress and strain of educators in different biographical groups, and to assess the relationship between occupational stress, organisational commitment and ill-health. A cross-sectional survey design was used. A stratified random sample (N = 1170) was taken of educators in the North West Province. An Organisational Stress Screening Tool (ASSET) and a biographical questionnaire were administered. The results confirmed the internal consistency of the ASSET. Differences between the occupational stress, organisational commitment and ill-health of educators in different types of schools, age, and qualification groups were found. Occupational stress and low organisational commitment explained 15% of the variance in physical ill-health and 30% of the variance in psychological ill-health. Although organisational commitment had major effects on physical and psychological ill-health, it only moderated the effect of one occupational stressor, namely, job insecurity, on the physical and psychological health of educators.

Introduction

Occupational stress is associated with increases in negative work-related outcomes, such as job dissatisfaction, ill-health, absenteeism, higher turnover and lower productivity (Jones & Bright, 2001). The negative effects of occupational stress include impaired performance or a reduction in productivity, diminishing levels of customer service, health problems, absenteeism, turnover, industrial accidents, alcohol and drug use and purposefully destructive behaviours (Quick, Quick, Nelson & Hurrell, 1997; Wright & Smye, 1996). Research by Winslow (1998) confirmed that those reporting high occupational stress and depression had health costs that were 2.5 times higher than those who were not. With such evidence mounting it is not surprising that civil law suits and workers' compensation claims for work stress-related disabilities are increasing.

Educators' work is becoming more complex and demanding. The roles of educators are not easily defined and the variables that come into play are growing more complex (Greenberg, 1984). Educators have to cope with demands such as the rationalisation of personnel, increased specialisation, the growing scope of syllabuses and a higher number of learners per class (Niehaus, Myburgh & Kok, 1996). Factors in the South African environment that contribute to the experience of stress of educators include increasing changes in education and society, and educators burdened with having to make a variety of modifications in their personal and professional lives. These changes include, among others: population increases, diversity in school populations, increases in cost of living, crime and its effects on learner behaviour, conditions of service, new rules and regulations of the education department, curriculum changes, performance appraisal systems and demands of unions (Mestry, 1999). Educators are exposed to high workloads, with a resultant increase in stress and strain. At least one third of the educators can be seen as suffering from stress (Boyle, Borg, Falzon & Baglioni, 1995).

Educator shortages are a direct or indirect result of stress-related issues in the educational

environment (Johnson, 2002; Slater, 2002). In South Africa, recent newspaper headlines have identified the recruitment and retaining of new educators as a major challenge for the Department of Education — 'Most SA teachers ready to quit' (Citizen, 19 April 1999); 'Many good teachers have quit in despair because of the OBE system' (Star, 13 August 2001); 'Profoundly sad so many teachers are quitting' (Citizen, 25 July 2002). Loss of educators due to early retirements and resignations may become a costly exercise to the provincial education departments because of both direct and indirect cost incurred through advertisements, recruitment, selection, induction, loss of experience and down-time because of inadequate training or a lack of experience.

Furthermore, an investigation into the number of days used by educators in the North West Province for sick leave, the number of educators using such leave, and the number of resignations has revealed that the use of such leave increased between 2001 and 2002 by 339.27% (or 57 666 days), the number of educators using such leave by 170.88% (or 3 686 educators) and the number of resignations by 82.74% (or 139 resignations) (North West Education Department Statistics, 2004). Even though these figures could be the result of a number of factors, the above research results indicate that stress plays a significant role in the resignations and absenteeism of educators. Therefore, it seems important to investigate the antecedents and consequences of stress of educators in the North West Province.

Occupational stress and ill-health

To organisational psychologists, work-related stress is considered to be the product of an imbalance between environmental demands and individual capabilities (Lazarus & Folkman, 1984). Most researchers, however, adopt the fairly common practice of using the term 'stress' to describe either the external stimulus from the environment or the response of the individual, or sometimes both meanings simultaneously. To minimise semantic difficulties as well as theoretical confusion, in this article we will use the terms 'stressors' or 'sources of pressure' to refer to characteristics of the external environment (i.e. job characteristics and working conditions) and the term 'strain' to describe any response of the individual to these (i.e. physical and psychological ill-health, job satisfaction and impaired job performance). The term 'stress' will, however, be used to indicate participants' responses to direct questions, for example, when enquiring whether they perceive a low, moderate or severe level of stress at work. Stressors do not inevitably lead to strain — a wide range of individual differences moderate this relationship.

According to the transactional model (Lazarus & Folkman, 1984), stress depends on an individual's cognitive appraisal of events and circumstances and on the ability to cope, these being the end result of a person's transaction with the environment. An individual's coping strategy is constantly changing to manage specific demands that are appraised as exceeding the person's resources (Lazarus & Folkman, 1984). Coping with stress in the work environment can, however, be less effective because many aspects of the work situation that are stressful tend to lie outside the individual's control (Kyriacou, 1981).

Research has demonstrated that work-related stressors can have a wide range of negative effects on individuals. Strain is observable at several different levels. Educator stress is seen mainly as a negative effect with diverse psychological (e.g. job dissatisfaction), physiological (e.g., high blood pressure) and behavioural (e.g., absenteeism) correlates. In the long run these negative stress effects could lead to physiological and biochemical changes accompanied by

psychosomatic and even chronic symptoms, such as coronary heart disease (Van Dick & Wagner, 2001). Other levels of strain include cognitive (e.g. poorer quality decision-making, lower levels of creativity and impaired memory) and interpersonal (e.g. reduced levels of sensitivity, warmth, consideration, altruism and tolerance) changes. For the purposes of this study strain was divided into physical and psychological ill-health.

Physical strain is a physiological reaction of the stress process, which can be divided into long-term and short-term strain (Frese & Zapf, 1988). A long-term strain is a physical illness, such as heart disease, which has been suggested as an outcome of stress (Greenglass, 1996; Julkunen, 1996). Short-term strains are physiological reactions, such as high blood pressure or suppression of the immune responses. Many of the short-term physical strains are associated with emotional reactions (O'Leary, 1990); they may in fact be mechanisms by means of which long-term physical strain occurs. Research has focused on three types of physical indicators: cardiovascular, biochemical and gastrointestinal symptoms (Fried, Rowland & Ferris, 1984). Psychological strain correlates strongly with work-related stressors (Jex & Beehr, 1991; Kahn & Byoiere, 1992). Psychological ill-health includes anxiety/panic attacks, irritability, difficulty in decision-making, loss of sense of humour, becoming easily angered, constant tiredness, feeling unable to cope, avoiding contact with other people, mood swings and inability to listen to others.

Cartwright and Cooper (2002) developed a model which includes occupational stressors, strain (ill-health) and organisational commitment (see Figure 1).

As can be seen in Figure 1, seven occupational stressors are distinguished, namely, work relationships (i.e. poor or unsupportive relationships with colleagues and/or superiors, isolation and unfair treatment), work-life imbalance (i.e. when work interferes with the personal and home life of individuals), overload (i.e. unmanageable work loads and time pressures), job security (i.e. fear of job loss or obsolescence), control (i.e. lack of influence in the way work is organised and performed), resources and communication (i.e. having the appropriate training, equipment and resources), pay and benefits (i.e. the financial rewards that work brings) and

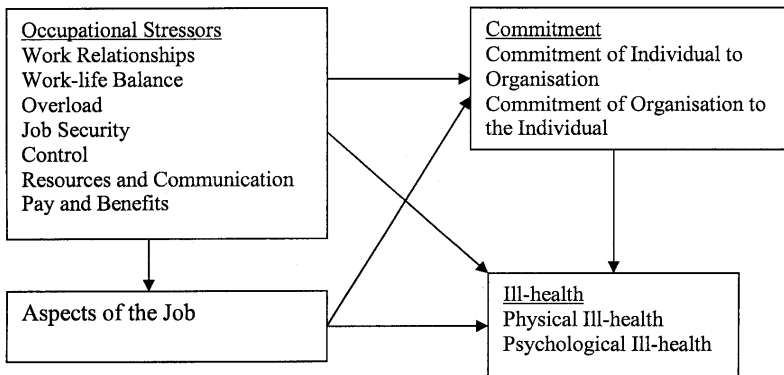


Figure 1 Model of occupational stress, commitment, and ill-health

aspects of the job (i.e. sources of stress related to the fundamental nature of the job itself) are sources of stress. Commitment (including the individual's commitment to the organisation and the organisation's commitment to the individual) refers to an effect of stress. Poor health is an outcome of stress, which can be used to ascertain if workplace pressures have positive and motivating or negative and damaging effects. However, poor health may not necessarily be indicative of workplace stress. Individuals may, for example, be unwell because they choose not to lead a healthy lifestyle or may be unaware of how to do so (Cartwright & Cooper, 2002). In a study done by Tytherleigh (2002) it was found that work relationships, job security, resources and communication caused the highest levels of strain.

In summary, it seems there is a relationship between perceptions of stressful working conditions and strain (physical and psychological ill-health). Whilst it is undoubtedly important to isolate the stressful features of any occupation and the extent of strain experienced by the workforce in order to inform policy and practice on stress at work, it is also necessary to isolate the stressors that have the strongest relationship with strains.

Organisational commitment

Because of a research tradition that places considerable emphasis on understanding individual differences between people in their perception of, and reaction to, stress, it is not surprising that the curiosity of researchers has led them inevitably to turn their attention to exploring the role of a range of individual differences (Cooper & Dewe, 2004). Individual differences have been hypothesised as influencing the stressor-strain relationship in one of three ways: directly (impacts on the level of strain), or by operating as a moderator (altering the strength or direction of the stress-strain relationship) (Cooper & Bright, 2001), or as a mediator (becoming responsible for the transmission of an effect) (Cox & Ferguson, 1991) of the stress-strain relationship. In this study, the main and moderator effects of a form of psychological hardiness on educators' physical and psychological ill-health were investigated. The main effects model predicts that a variable (such as psychological hardiness) has direct and uniform effects on health, irrespective of the levels of adversity experienced. The moderator models propose that a variable such as psychological hardiness buffers an individual against the effects of stress, in an interactive way.

Psychological hardiness is an important variable in the occupational stress/physical and psychological health equation. Kobasa (1979), examining high stress individuals with a low incidence of illness, coined the term "hardiness". For Kobasa, hardy individuals a) believe that they can control or influence events, b) have a commitment to activities, and c) view change as a challenge rather than a threat. Organisational commitment, which is defined as the relative strength of an individual's identification with and involvement in an organisation (Mowday, Porter & Steers, 1992), could be regarded as one aspect of psychological hardiness. Siu (2002) showed that organisational commitment was not only related to most of the physical and psychological outcomes among workers, but also to the moderating affects on the stressor-health relationship. As mentioned earlier, the stress process depends on the person's role in appraising the stressor, and organisational commitment is a "person" factor. Siu (2002) argued that the moderating effect of commitment protects individuals from the negative effect of stress, due to the fact that it enables them to attach direction and meaning to their work.

Occupational stress and biographical variables

It is apparent that stress is not experienced uniformly by educators, but varies from one individual to another (Albertson & Kagan, 1987; Dworkin, Haney, Dworkin & Telschow, 1990; Worrall & May, 1989). Studies have provided evidence that individual personality traits, for example, locus of control and type-A personality, play substantial roles in occupational stress (Cooper, Kirkcaldy & Brown, 1994; Davey, 1994; Wilson, Mutero, Doolabh & Herzstein, 1990). However, reported studies of occupational stress, concerned with biographical differences, such as position and years of service, do not appear to have been as fruitful. For example, after conducting a meta-analysis of studies investigating the relationship between gender and occupational stress, Martocchio and O'Leary (1989) concluded that there were no differences in experienced stress between males and females. It may be that there is virtually no variation in occupational stress among biographically differentiated groups of educators. However, such homogeneity, particularly in a large school system, would appear unlikely. Moreover, some differences have been reported in a small number of studies (Laughlin, 1984; Travers & Cooper, 1993). It is possible that the failures of some past research to elicit biographical differences may be accounted for by a lack of suitability of the particular underlying theories or, for that matter, a lack of theory. Indeed, Worrall and May (1989) considered much of the earlier research into educator stress to lack a theoretical focus. A further gap in the literature is the apparent paucity of studies comparing the stress of educators in different school contexts. If differences do exist between groups of educators, it is likely to be useful to identify them, because strategies for stress amelioration which do not take these differences into account will be relevant only to a proportion of a heterogeneous population.

McCormick and Solman (1992) posited an empirically supported attribution-of-responsibility model for educator stress which is essentially concerned with how educators cognitively organise domains to which responsibility can be attributed for their occupational stress. It is proposed that educators develop schemas which incorporate attributions of responsibility for stable dimensions of their occupational stress. Educators' attributions of responsibility for their occupational stress reflect their perceptions, and consequently, their realities (McCormick, 1997). A contribution to the model is made by the phenomenon known in attribution theory as hedonic bias (Forsterling, 1988), which suggests that individuals tend to attribute responsibility for success to themselves, and responsibility for failure to others. The negative nature of occupational stress, the perceived failure which is associated with responsibility for one's own stress, and the phenomenon of the hedonic bias, suggest that educators will attribute greater responsibility for their stress to domains which are distant from the personal domain. The attribution-of-responsibility for occupational stress model may provide an appropriate vehicle for investigating group differences for the occupational stress of educators, as there is evidence that social category memberships, rather than personal characteristics, may be important determinants of attribution (McCormick, 1997). This study focused on three biographical variables, namely, type of school, age, qualification and gender.

Research aims

The aims with this study were to analyse the occupational stress of educators, to determine the differences between the occupational, ill-health and organisational commitment of educators in different biographical groups, and to assess the relationship between occupational stress, organisational commitment and ill-health.

Method

Research design

A cross-sectional survey design was used. In this design, the focus is on relationships between and among variables in a single group (Robson, 2002).

Participants

A stratified random sample ($N = 1170$) was taken of educators in the North West Province. Seven school districts (Klerksdorp, Lichtenburg, Mafikeng, Potchefstroom, Rustenburg, Vryburg, and Zeerust) were randomly sampled from a group of 12 districts in the province. Two school circuits were randomly selected from each group of circuits. A district could consist of between six and eight circuits. A circuit could consist of between 20 and 40 schools that differ in terms of size (small, medium, and large) and locality (rural, urban, and farm school). Questionnaires were sent to all educators in the schools of randomly selected circuits.

The sample consisted mainly of permanent (89.42%) Setswana-speaking (45.88%) females (69.48%), who were married (46.25%), possessed a Grade 12 certificate and an Education Diploma and/or a bachelor's degree (45.68%), who had not experienced a major stressful event over the last six months (56.69%), and who were members of a trade union (91.25%). Some of the characteristics of the participants are presented in Table 1.

Procedure

The Director-General of the North West Education Department gave permission for the study to be conducted. Meetings were convened with the management teams in the districts that had been randomly selected for inclusion in the sample. The role of the district manager was to provide dates of the school principals' meetings, where presentations were made regarding the objective of the study. Principals were provided with questionnaires to hand out among their staff. Envelopes with stickers were also included in this package to ensure confidentiality. The completed questionnaires were to be given to the principal, who then left them with the circuit manager at the circuit office for collection by the researchers.

Measuring instruments

A biographical questionnaire was designed to gather information regarding gender, position, education and marital status.

The ASSET (which refers to An Organisational Stress Screening Tool) was developed by Cartwright and Cooper (2002) as an initial screening tool to help organisations assess the risk of occupational stress in their workforce. It measures potential exposure to stress in respect of a range of common workplace stressors. It also provides important information on current levels of physical health, psychological well-being and organisational commitment, and provides data to which the organisation can be compared. The ASSET is divided into four questionnaires. The first questionnaire (37 items) measures the individual's perception of stressors in his or her job. This questionnaire consists of seven subscales, namely Resources and Communication, Job Security, Work-Life Balance, Control, Overload, Job Characteristics and Work Relationships. The second questionnaire (nine items) measures the individual's commitment toward his or her organisation. The third questionnaire (19 items) focuses on the individual's physical health and psychological well-being. The fourth questionnaire (24 items) focuses on supplementary information. These items are customized specifically for the teaching environ

Table 1 Characteristics of the participants

Item	Category	Percentage
Home language	Afrikaans	30.47
	English	1.58
	Sepedi	2.89
	Sesotho	12.17
	Setswana	45.88
	SiSwati	0.70
	Tshivenda	0.35
	IsiNdebele	0.61
	IsiXhosa	3.94
	IsiZulu	1.31
Position	IsiTsonga	0.09
	Post level 1 - Educator	76.28
	Post level 2 - Head of Department	15.06
	Post level 3 - Deputy Principal	6.66
Education	Post level 4 - Principal	1.64
	Grade 12 + Education Diploma (M + 3)	33.16
	Grade 12 + Higher Education Diploma or B. Degree (M + 4)	45.68
	Grade 12 + Education Diploma + Honours Degree (M + 5)	18.51
Gender	Grade 12 + Education Diploma + Masters Degree	2.64
	Male	30.52
Marital status	Female	69.48
	Single	21.34
	Engaged	4.18
	Married	46.25
	Separated/Divorce/Death	3.22
	Remarried	1.57

ment. The first three questionnaires of the ASSET are scored on a six-point scale with 1 = strongly disagree to 6 = strongly agree. The fourth questionnaire is scored on a four-point scale with 1 = never to 4 = often.

The ASSET has an established set of norms from a database of responses from 9 188 workers in public- and private-sector organisations in the United Kingdom. The ASSET presents scores in sten (standardised ten) format. A sten is a standardised score based on a scale of 1 to 10, with a mean of 5.5 and a standard deviation of 2. The sten system enables meaningful comparison to the norm group. Most people (68%) score between sten 3 and sten 8. Scores that fall further from the mean (either in the high or the low direction) are considered more extreme. About 16% score at the low end, and another 16% score at the high end.

Reliability of the scale is based on the Guttman split-half coefficient. All but two factors returned coefficients in excess of 0.70, ranging from 0.60 to 0.91 (Cartwright & Cooper, 2002). Johnson and Cooper (2003) found that the Psychological Well-being subscale has good convergent validity with an existing measure of psychiatric disorders, the General Health Questionnaire (Goldberg & Williams, 1988). Tytherleigh (2003) used the ASSET as an outcome measure of job satisfaction in a nationwide study of occupational stress levels in 14 English higher

education institutions. The alpha coefficients of the scales of the ASSET ranged from 0.64 to 0.94.

Statistical analysis

The SAS-program (SAS Institute, 2000) was used to compute descriptive statistics, correlations and one-way analysis of variance. Cronbach alpha coefficients and inter-item correlations were used to determine the internal consistency, homogeneity and unidimensionality of the scales of the ASSET (Clark & Watson, 1995). Pearson product-moment correlation coefficients were used to specify the relationship between the variables. One-way analysis of variance (ANOVA) was used to determine the differences between the sub-groups of the sample. Tukey's Standardised Range *t* tests were used to determine the significance of differences obtained during ANOVAs. In terms of significance, it was decided to set the value at $p \leq 0.05$. Effect sizes (Steyn, 1999) were used to decide on the practical significance of the findings. A cut-off point of 0.30 (medium effect) (Cohen, 1988) was set for the practical significance of correlation coefficients.

A two-step multiple regression analysis was conducted with the variables in their continuous form. In the first step, the predictor (i.e. stressor) and moderator (i.e. organisational commitment) 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 (stressor \times organisational commitment) (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.

Results

The descriptive statistics of the ASSET items are presented in Table 2.

Table 2 shows that the scores on the 12 dimensions of the ASSET were normally distributed in the sample, with low skewness and kurtosis. The Cronbach alpha coefficients, varying from 0.59 to 0.89, compared reasonably well with the guideline of 0.70 (0.55 in basic research) (Nunnally & Bernstein, 1994). The internal consistencies of three scales, namely, Job Insecurity, Resources and Communication and Job Characteristics were problematic. All the mean inter-item correlations of the ASSET dimensions compared well with the guideline of $0.15 < r < 0.50$ (Clark & Watson, 1995).

Inspection of Table 2 indicates that in the total sample all the stressor dimensions were perceived as moderately stressful. Stressors which obtained higher than average sten scores included working unsocial hours, not having proper and sufficient equipment and/or resources, people taking credit for what others have achieved, skills that may become redundant and constant changes in the organisation. Aspects such as close monitoring of work and doing the same job for the next five to ten years were regarded as very stressful (sten = 8).

Commitment from the Organisation, Physical Ill-health and Psychological Ill-health had higher stens (9, 7 and 10, respectively) compared to the other dimensions of the ASSET. "Being proud of the organisation", "Being interested in aspects of the organisation", "It is worthwhile to work for the organisation" and "Commitment to the organisation" were just some of the items that contributed to the above-average sten of Commitment from the organisation. Table 2 also indicates that Physical Ill-health (i.e. frequently feeling sick, headaches, muscular tension, aches and/or pains) and Psychological Ill-health (i.e. panic attacks, constant irritability

Table 2 Descriptive statistics, alpha coefficients and inter-item correlations of the ASSET

Dimension / Item	Sten	Mean	SD	Skew-ness	Kurto-sis	<i>r</i> (Mean)	α
Work-Life Balance	4	11.35	4.82	0.42	-0.74	0.35	0.69
Work longer hours than choose/want to	5	3.28	1.68	0.18	-1.31	-	-
Work unsocial hours	7	3.70	1.74	0.66	-0.01	-	-
Too much time travelling	5	2.38	1.57	1.07	-0.01	-	-
Work interferes with my home/personal life	3	3.00	1.71	0.41	-1.22	-	-
Resources and Communication	2	11.17	3.95	0.44	-0.00	0.27	0.59
Not informed about what goes on in organisation	1	2.44	1.30	0.94	0.15	-	-
Never told I am doing a good job	4	2.86	1.46	0.56	-0.77	-	-
Not adequately trained for job	3	2.45	1.43	0.95	-0.08	-	-
Do not have proper equipment/resources	7	3.42	1.69	0.07	-1.31	-	-
Work Relationships	4	19.05	6.82	0.82	0.88	0.32	0.79
Boss intimidating/bullying	4	2.09	1.42	1.41	1.03	-	-
Lack of support from boss/colleagues	3	2.45	1.37	0.94	0.01	-	-
Feel isolated at work	3	2.18	1.23	1.25	1.08	-	-
Not sure of expectations from boss	3	2.28	1.31	1.16	0.68	-	-
Colleagues are not pulling their weight	5	3.30	1.60	0.13	-1.20	-	-
Boss is forever finding fault	4	2.06	1.19	1.49	1.99	-	-
Others take credit for what I have achieved	7	2.74	1.49	0.63	-0.78	-	-
Relationships with colleagues are poor	4	1.96	1.12	1.65	2.81	-	-
Overload	5	11.07	4.12	0.42	-0.33	0.36	0.68
Technology in job is overloading	6	2.67	1.45	0.73	-0.50	-	-
Unrealistic deadlines	5	2.49	1.25	0.87	0.11	-	-
Unmanageable workloads	4	2.69	1.44	0.74	-0.51	-	-
Not enough time to do job properly	6	3.23	1.58	0.23	-1.16	-	-
Job Security	6	11.93	4.20	0.42	-0.15	0.24	0.57
Job is insecure	6	3.02	1.70	0.44	-1.18	-	-
Job is not permanent	5	2.24	1.63	1.26	0.26	-	-
My job is likely to change in future	6	3.69	1.56	-0.25	-1.15	-	-
My skills may become redundant	7	2.98	1.48	0.43	-0.79	-	-
Job Characteristics	5	24.94	6.39	0.28	0.44	0.17	0.61
Same job for next 5-10 years	8	4.20	1.64	-0.71	-0.78	-	-
Physical work conditions are unpleasant	5	2.91	1.67	0.54	-0.99	-	-
Job involves risk of physical violence	4	2.33	1.45	1.07	0.16	-	-
Work performance closely monitored	8	3.99	1.43	-0.64	-0.64	-	-
Organisation is constantly changing for sake of change	7	3.38	1.63	0.14	-1.21	-	-
Work is dull and repetitive	5	2.50	1.44	0.89	-0.24	-	-
Deal with difficult customers/clients	4	3.20	1.55	0.17	-1.15	-	-
Do not enjoy job	4	2.45	1.48	0.95	-0.13	-	-

Table 2 Continued

Dimension / Item	Sten	Mean	SD	Skew-ness	Kur-tosis	<i>r</i> (Mean)	α
Control	2	11.23	4.11	0.57	-0.01	0.40	0.72
Little control over many aspects of job	3	3.12	1.50	0.27	-0.96	-	-
Not involved in decisions affecting my job	4	2.74	1.42	0.72	-0.47	-	-
My ideas/suggestions are not taken into account	5	2.74	1.36	0.77	-0.29	-	-
Little/no influence over performance targets	3	2.62	1.28	0.88	0.09	-	-
Pay and benefits	4	3.26	1.79	0.23	-1.40	-	-
Commitment from organisation	9	22.22	4.97	-0.84	0.73	0.49	0.83
Commitment from individual	7	17.54	3.69	-0.81	1.01	0.33	0.65
Physical health	7	14.36	4.23	-0.05	-0.62	0.39	0.79
Psychological health	10	23.33	7.50	0.53	-0.05	0.40	0.89

and difficulty in making decisions) were relatively high in comparison with the international norm.

Next, the differences between various biographical groups of educators were analysed in terms of perceived occupational stress, organisational commitment and ill-health as reflected by the ASSET. The differences in occupational stress, organisational commitment and ill-health of educators in different types of schools are reported in Table 3.

Table 3 ANOVAs — Differences in Occupational Stress, Organisational Commitment, and Ill-health of teachers in different types of schools

Item	Primary	Intermediate	Combined	Secondary	Root MSE	<i>p</i>
Work-life balance	10.58	10.14 ^a	10.24	13.31 ^b	4.67	0.00*
Resources and communication	10.84	12.40	11.70	11.39	3.94	0.00*
Work relationships	18.47	19.83	20.85	19.77	6.83	0.00*
Overload	10.38 ^a	10.60	10.88	12.57 ^b	4.02	0.00*
Job security	11.46	11.64	12.24	12.97	4.19	0.00*
Job characteristics	24.29	24.16	23.91	26.32	6.36	0.00*
Control	10.69	11.05	11.33	12.20	4.06	0.00*
Commitment from organisation	22.89	21.94	21.58	21.07	4.88	0.00*
Commitment from individual	17.73	17.16	16.76	17.34	3.63	0.16
Physical ill-health	14.38	13.37	14.12	14.54	4.22	0.24
Psychological ill-health	22.94	22.14	21.64	24.50	7.52	0.00*

* Significant difference: $p < 0.01$; a Practically significant differences from group (in row) where b (medium effect, $d \geq 0.5$) or c (large effect, $d \geq 0.8$) are indicated

Inspection of Table 3 shows that significant differences existed in the experience of educators of nearly all the different school categories, with the exception of Commitment from the Individual and Physical Health. Work-life Balance showed a practically significant difference (with a medium effect) between educators in intermediate and secondary schools. The mean scores for educators in primary schools also showed a practically significant difference in the experience of Workload, compared to the colleagues in secondary schools. Educators in secondary schools generally scored higher on perception of Job Characteristics as potential stressors, lower on Commitment from the Organisation and higher on Psychological Ill-health, relative to the other types of schools in the sample. However, none of these mean score differences, although significantly different, showed medium or large practical significance.

The differences in occupational stress, organisational commitment and ill-health of educators with different qualifications are reported in Table 4.

Table 4 ANOVAs — Differences in Occupational Stress, Organisational Commitment, and Ill-health of teachers with different qualifications

Item	1	2	3	4	Root MSE	<i>p</i>
	M + 3 (Diploma)	M + 4 (B degree)	M + 5 (Hons degree)	M + 6 (M degree)		
Work-life balance	10.72 ^a	11.46	13.11 ^b	13.77 ^b	4.79	0.00*
Resources and communication	11.22	10.94	11.19	11.39	3.97	0.73
Work relationships	18.67	19.23	19.83	18.39	6.90	0.29
Overload	10.85	11.01	12.00	12.73	4.11	0.00*
Job security	11.62	12.11	12.63	12.81	4.29	0.06
Job characteristics	25.07	24.55	25.90	26.46	6.44	0.07
Control	10.60	11.33	11.97	12.16	4.15	0.00*
Commitment from organisation	22.81	22.00	21.43	21.12	4.94	0.00*
Commitment from individual	17.62 ^c	17.52 ^c	7.34 ^a	16.12 ^c	3.72	0.23
Physical ill-health	14.11	14.46	14.50	14.62	4.21	0.64
Psychological ill-health	22.24	23.78	24.89	24.31	7.51	0.00*

* Significant difference: $p < 0.01$; a Practically significant differences from group (in row) where b (medium effect, $d \geq 0.5$) or c (large effect, $d \geq 0.8$) are indicated

Table 4 shows that significant differences existed in the experience of stress because of Work-life Balance and Overload as well as Commitment from the Organisation and Psychological (Ill-)Health between educators with different qualifications. There was a practically significant difference (of medium effect) between the stress because of Work-life (Im-)Balance between educators with a teaching diploma and educators with postgraduate qualifications. A practically significant difference (large effect) also existed in the experience of Commitment from the Individual to the organisation between educators of all qualifications and those with an honours degree.

The differences in occupational stress, organisational commitment and ill-health of educators in different age categories, as measured by the ASSET, are reported in Table 5.

Table 5 ANOVAs — Differences in Occupational Stress, Organisational Commitment, and Ill-health of teachers in different age categories

Item	1 18–27	2 28–32	3 33–38	4 39–44	5 45–50	6 51–56	7 57–58	Root MSE	<i>p</i>
Work-life balance	13.87 ^b	10.72 ^a	11.09	11.97	10.90	12.19	12.14	4.80	0.00*
Resources and communication	10.50	11.09	11.08	11.52	11.03	10.41	10.71	3.91	0.38
Work relationships	20.41	18.94	19.40	19.49	18.57	17.54	19.07	6.86	0.26
Overload	12.06	10.37	11.05	11.59	10.87	11.07	11.59	4.14	0.15
Job security	13.16	11.63	12.47	12.09	11.42	11.80	11.60	4.26	0.14
Job characteristics	25.75	24.50	25.30	25.64	24.26	24.73	23.86	6.48	0.31
Control	12.72 ^b	10.16 ^a	11.37	11.50	10.64	10.92	11.35	4.04	0.00*
Commitment from organisation	21.84	22.26	22.56	21.76	22.80	22.01	21.43	4.95	0.37
Commitment from individual	16.25 ^a	18.17 ^b	17.98	17.13	17.49	17.44	16.89	3.67	0.01*
Physical ill-health	15.75	14.12	13.81	14.70	13.91	14.18	5.21	4.16	0.06
Psychological ill-health	27.88 ^b	22.09 ^a	23.02	23.64	23.02	22.38	24.61	7.50	0.00*

* Significant difference: $p < 0.01$; a Practically significant differences from group (in row) where b (medium effect, $d \geq 0.5$) or c (large effect, $d \geq 0.8$) are indicated

Inspection of Table 5 shows that significant differences exist in the experience of stress because of Work-life Balance and Control, but also in the Commitment from the Individual to the Organisation and Psychological Ill-health between educators in the different age categories. Stress because of Work-life Balance and Control is practically significantly higher (medium effect) for educators in the age group 18 to 27 than for those in the 28 to 32 group. Educators in the age group 28 to 32 achieved a practically significantly higher score (of medium effect) on Commitment from Individual to the Organisation compared with the 18 to 27 age group. Educators in the age group 18 to 27 obtained a practically significantly higher score (medium effect) on Psychological Ill-health compared to the 28 to 32 age group.

T tests were done to determine whether significant differences existed between the occupational stress, organisational commitment and ill-health of males and females. However, no significant gender differences were found.

The product-moment correlation coefficients between the ASSET dimensions are reported in Table 6.

Inspection of Table 6 indicates that Physical Ill-health is practically significantly related to stress because of Work-life Balance, Overload and Job Characteristics (all medium effects). Psychological Ill-health is practically significantly related to Work-life Balance, Resources and Communication, Work Relationships, Overload, Job Characteristics, Control and Commitment from the Organisation. Commitment from the Organisation is practically significantly related

Table 6 Product-moment correlation coefficients of the ASSET dimensions

Dimensions	1	2	3	4	5	6	7	8	9	10
Work-life balance	-	-	-	-	-	-	-	-	-	-
Resources and communication	0.20*	-	-	-	-	-	-	-	-	-
Work relationships	0.32*+	0.56*++	-	-	-	-	-	-	-	-
Overload	0.56*++	0.51*++	0.57*++	-	-	-	-	-	-	-
Job security	0.36*+	0.37*+	0.40*+	0.46*+	-	-	-	-	-	-
Job characteristics	0.45*+	0.50*++	0.53*++	0.55*++	0.44*+	-	-	-	-	-
Control	0.47*+	0.58*++	0.63*++	0.57*++	0.43*+	0.53*++	-	-	-	-
Commitment — individual	-0.14*	-0.21*	-0.19*	-0.15*	-0.14*	-0.23*	-0.29*	-	-	-
Commitment — organisation	-0.21*	-0.32*+	-0.37*+	-0.26*	-0.26*	-0.31*+	-0.43*+	0.65*++	-	-
Physical health	0.30*+	0.20*	0.26*	0.30*+	0.20*	0.32*+	0.28*	-0.13*	-0.19*	-
Psychological health	0.40*+	0.30*+	0.38*+	0.43*+	0.28*	0.45*+	0.41*+	-0.21*	-0.31*+	0.63*++

* $p \leq 0.05$ Significant

+ $r > 0.30$ Practically significant (medium effect)

++ $r > 0.50$ Practically significant (large effect)

to Resources and Communication, Work Relationships, Job Characteristics and Control.

To assess whether occupational stress and organisational commitment predict physical and psychological ill-health of educators, a series of standard multiple regression analyses were carried out. For the purposes of the regression analyses, organisational commitment was treated as a one-factor variable (i.e. the sum of the nine organisational commitment items). The results of standard multiple regression analyses, with occupational stress and organisational commitment as independent variables, and Physical and Psychological Ill-health as dependent variables, are reported in Table 7.

Table 7 Standard multiple regression analyses

Variable	Unstandardised coefficients		Standardised coefficients	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i> ²	<i>R</i>
	B	SE	Beta					
Physical ill-health								
(Constant)	90.83	0.97		100.13	0.00	25.15*	0.15	0.38
Work-life balance	0.14	0.03	0.16	40.40	0.00*			
Resources and communication	-0.01	0.04	-0.01	-0.32	0.75			
Work relationships	0.04	0.02	0.07	10.81	0.07			
Overload	0.07	0.04	0.07	10.76	0.08			
Job security	-0.02	0.03	-0.02	-0.49	0.63			
Job characteristics	0.10	0.02	0.14	30.92	0.00*			
Control	0.04	0.04	0.04	0.89	0.38			
Organisational commitment	-0.03	0.02	-0.05	-10.79	0.07			
Psychological ill-health								
(Constant)	140.44	10.56		90.28	0.00	62.92*	0.30	0.55
Work-life balance	0.24	0.05	0.15	40.78	0.00*			
Resources and communication	-0.09	0.07	-0.05	-10.46	0.15			
Work relationships	0.11	0.04	0.10	20.77	0.01*			
Overload	0.25	0.07	0.14	30.75	0.00*			
Job security	-0.03	0.05	-0.02	-0.52	0.60			
Job characteristics	0.25	0.04	0.21	60.36	0.00*			
Control	0.12	0.07	0.07	10.80	0.07			
Organisational commitment	-0.12	0.03	-0.13	-40.72	0.00*			

* $p < 0.01$

The results in Table 7 show that occupational stress (as measured by the ASSET) explained 15% of the variance in Physical Ill-health (as measured by the Health subscale of the ASSET). The regression coefficients of two occupational stressors, namely Work-Life Balance and Job Characteristics were significant ($p < 0.01$). Furthermore, Table 7 shows that occupational stress (as measured by the ASSET) explained 30% of the variance in Psychological

Table 8 Regression analyses to test the moderating effect of Organisational Commitment

Physical ill-health	<i>F</i>	<i>R</i>	<i>R</i> ²	Physical ill-health	<i>F</i>	<i>R</i>	<i>R</i> ²
Work-life balance, Organisational commitment	72.96	0.33	0.11	Work-life balance, Organisational commitment and Interaction term	49.04	0.33	0.11
Resources and communication, Organisational commitment	37.88	0.25	0.06	Resources and communication, Organisational commitment and Interaction term	25.34	0.24	0.06
Work relationships, Organisational commitment	57.96	0.30	0.09	Work relationships, Organisational commitment and Interaction term	38.84	0.30	0.09
Overload, Organisational commitment	71.20	0.33	0.11	Overload, Organisational commitment and Interaction term	47.87	0.33	0.11
Job security, Organisational commitment	36.71	0.24	0.05	Job security, Organisational commitment and Interaction term	26.72	0.25	0.06*
Job characteristics, Organisational commitment	78.61	0.34	0.12	Job characteristics, Organisational commitment and Interaction term	52.79	0.34	0.12
Control, Organisational commitment	59.94	0.30	0.09	Control, Organisational commitment and Interaction term	39.97	0.30	0.09
Psychological ill-health				Psychological ill-health			
Work-life balance, Organisational commitment	168.95	0.47	0.22	Work-life balance, Organisational commitment and Interaction term	112.54	0.47	0.22
Resources and communication, Organisational commitment	87.29	0.36	0.13	Resources and communication, Organisational commitment and Interaction term	58.50	0.36	0.13
Work relationships, Organisational commitment	124.55	0.42	0.18	Work relationships, Organisational commitment and Interaction term	83.30	0.42	0.18
Overload, Organisational commitment	177.60	0.48	0.23	Overload, Organisational commitment and Interaction term	118.65	0.48	0.23
Job security, Organisational commitment	94.46	0.37	0.13	Job security, Organisational commitment and Interaction term	64.34	0.38	0.14*
Job characteristics, Organisational commitment	173.49	0.48	0.23	Job characteristics, Organisational commitment and Interaction term	116.77	0.48	0.23
Control, Organisational commitment	138.14	0.44	0.19	Control, Organisational commitment and Interaction term	92.68	0.44	0.19

Ill-health (as measured by the Health subscale of the ASSET). The regression coefficients of four occupational stressors, namely Work-Life Balance, Work Relationships, Overload, and Job Characteristics, as well as Organisational Commitment were significant ($p < 0.01$).

Next, the possible moderating effects of organisational commitment were tested on Physical and Psychological Ill-health of educators (see Table 8).

It is clear from Table 8 that except for one occupational stressor, Job Security, the R^2 did not increase significantly when the interaction term between the specific occupational stressor and organisational commitment was entered into the regression analysis. Therefore, it seems that Job Security interacted with Organisational Commitment to affect Physical and Psychological Ill-health of educators. In other words, for educators who experienced higher stress because of job insecurity, low organisational commitment contributed more to physical and psychological ill-health. However, this finding should be treated with caution, because the alpha coefficient of the scale that was used to measure Job Security was questionable.

Discussion

The aims of this study were to analyse the occupational stress of educators, to determine the differences between the occupational, ill-health and organisational commitment of different demographic groups, to assess the relationship between occupational stress and ill-health, and to determine the main and moderator effects of occupational stress and organisational commitment on ill-health.

Reliability analysis revealed that the scales of the ASSET, with the exception of Job Security, Resources and Communication and Job Characteristics were sufficiently internally consistent. Therefore, the results regarding these dimensions should be interpreted with caution. The analysis of the sten scores of the ASSET dimensions indicated average scores on all the dimensions of stress as measured by the instrument. However, closer inspection revealed that some aspects (as measured by specific items) of these dimensions obtained high scores. On the other hand, the scores obtained for the effects of stress (outcomes), were high for physical ill-health to average for psychological ill-health and very high for perceived commitment from the organisation to high for commitment from the individual. Job security, overload, job characteristics, work relationships, pay and benefits and work-life balance were important stressors. Control as well as resources and communication were experienced as less stressful.

The analyses showed that aspects related to job characteristics were relatively stressful, namely, close monitoring of performance and having the same job for the next five to 10 years. The North West Education Department recently introduced initiatives aimed at improving the performance of public schools, such as the introduction of school management teams and whole-school development projects. These interventions focus on monitoring the performance of educators. Furthermore, curricula for schools are not frequently revised, which implies that some educators could have been teaching the same subject matter for 10 years and therefore would have no expectations that the subject matter would change during the next 10 years. A lack of training and development of educators as well as constant changes in the organisation may contribute to fear that their skills would become redundant.

Other aspects that were relatively stressful included having to work unsocial hours, lack of proper equipment, the fact that others take credit for what a person achieves, fears that skills will become redundant and constant changes that were taking place in the organisation. Participation in extramural activities such as sports (coaching and refereeing) normally increases

the likelihood that the service of educators would be needed after hours and during weekends. Furthermore, meaningful interaction with parents to discuss the progress of their children can often only occur after normal working hours. These factors, as well as preparation for lessons and the marking of assignments and class tests, could all contribute to stress. Fears of skills becoming redundant could be caused by the fact that very few schools use computers for covering most teaching activities. The lack of opportunities for continuous professional development in education could also contribute to the fears about redundancy of skills.

When interpreting sten scores, the ideal is low scores for perception of one's job (stressors) and one's health, but high scores for one's attitude towards one's organisation (Tytherleigh, 2002). In the present study, the ideal situation prevailed only partially, in the sense that low scores were observed for perception of the job (stressors), high scores for attitude towards the organisation (commitment), but alarmingly high scores were observed for specific physical symptoms such as headaches, feeling sick and muscular tension/aches/pains, and very high scores for psychological ill-health symptoms. Sten scores for perceived commitment from the organisation and commitment from the individual to the organisation were high. Educators in the sample seem committed to their organisation. Whilst they may express occupational stress, organisational commitment may contribute to their having meaning in their work.

The results of this study showed that educators in secondary schools (compared with those in primary schools) generally experienced more stress because of workload and job characteristics, as well as lower organisational commitment, and more ill-health symptoms. Educators in secondary schools probably experience high emotional demands because of the type of learners they are working with (adolescents in this instance). Interaction with learners contributes to (emotional) overload, which was found to be an important determinant of burnout for educators (Van Horn, Schaufeli & Enzmann, 1999). A practically significant difference was found concerning the experience of work-life balance and practically significant differences also existed in the experience of commitment from the individual to the organisation between educators with the minimum and those with the highest qualifications. Educators in the age group of 18 to 27 generally scored higher on perception of job dimensions as potential stressors, lower on attitude towards the organisation and higher on ill-health, relative to the other sub-groups (different age groups) in the sample. Results obtained in this study indicated that those at risk of high stress in the North West Education Department seemed to be those who were teaching in secondary schools, with the minimum qualifications, and who had just started their careers. Two possible explanations could be given for the finding that younger educators experienced more stress and strain (including ill-health and low organisational commitment). First, it is possible that educators, who found their jobs to be stressful, left the profession after a number of years. Second, educators may have learned to cope differently with stressors. Considering the statistics regarding staff turnover (North West Education Department Statistics, 2004), it is plausible that educators who experience high levels of occupational stress resign after a number of years. Furthermore, social category memberships of educators (including age category, qualifications and type of school) may affect their attributions.

Occupational stressors and organisational commitment were positively related to physical and psychological ill-health. However, work-life imbalance (i.e. when work interferes with the personal and home life of individuals) and aspects of the job (i.e. sources of stress related to the fundamental nature of the job itself) best explained the variance in physical ill-health. In addition to these two stressors, two others, namely work relationships (i.e. poor or unsupportive

relationships with colleagues and/or superiors, isolation and unfair treatment) and overload (i.e. unmanageable work loads and time pressures) also contributed to psychological (un)well-being. Organisational commitment had a main effect on psychological health, which implied an effect thereof on psychological health irrespective of the effect of occupational stress (see also Cooper, Dewe & O'Driscoll, 2001). Organisational commitment enables individuals to attach direction and meaning to their work, which may protect them from psychological ill-health (Siu, 2002).

Organisational commitment moderated the effect of job insecurity on ill-health. This is partly in line with recent findings that organisational commitment is not only related to most of the physical and psychological outcomes among workers, but also to the moderating effects on the stressor–health relationship (Siu, 2002). However, this finding should be interpreted with caution, because of the relatively low internal consistency of the scale which was used to measure job insecurity.

The sampling procedure was a limitation of the present study. This may impact on the possibility of generalisation of the findings to the total study population. Furthermore, the research design was cross-sectional which implies that causal inferences cannot be made. In future studies longitudinal designs should be used. A further limitation of this study was its sole reliance on self-reporting measures.

Recommendations

Primary interventions are necessary to prevent/reduce stress of educators. According to Kompier and Kristensen (2001), primary interventions may, in the first place, be directed at either the work situation or the coping capacity of the employee. Work-oriented interventions aim to improve the fit between an individual and the workplace. Worker-oriented interventions are aimed at teaching employees to deal more effectively with experienced stress, or to modify their appraisal of a stressful situation, so that the perceived stress threats are reduced. If the physical and psychological stressors in particular are allowed to continue unattended, the organisation can expect to encounter negative costs associated with continued elevated levels of stress, such as burnout, absenteeism and employee turnover, and diminished levels of service. In the present study physical and psychological health were found to be the major outcomes of perceived stressors. Secondary-level interventions can be implemented to prevent employees who are already showing signs of stress from getting sick, and to increase their coping capacity. Typical examples would include cognitive structuring, time management, conflict resolution techniques and coping strategies. Tertiary-level interventions are concerned with the rehabilitation of individuals who have suffered ill-health or reduced well-being as a result of strain in the workplace.

The current study only considered educators in certain districts in the North West Education Department, and it is recommended that the study be expanded to the other districts in the North West Province as well as in the other provinces of South Africa, also including similar samples in private and special schools in South Africa. Further refining and testing of the ASSET are needed.

Acknowledgement

The material described in this article was based upon work supported by the National Research Foundation.

References

- Aiken LS & West SG 1991. *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage.
- Albertson LM & Kagan DM 1987. Occupational stress among teachers. *Journal of Research and Development in Education*, 21:69-75.
- Anonymous 1999. Most SA teachers ready to quit. *Citizen*, 19 April.
- Bentler PM 1990. Comparative fit indexes in structural models. *Psychological Bulletin*, 107:238-246.
- Bentler PM 1992. On the fit of models to covariances and methodology to the Bulletin. *Psychological Bulletin*, 112:400-404.
- Boyle GJ, Borg MG, Falzon JM & Baglioni AJ Jr 1995. A structural model of the dimensions of teacher stress. *British Journal of Educational Psychology*, 65:49-67.
- Cartwright S & Cooper CL 2002. *ASSET: An Organisational Stress Screening Tool — The Management Guide*. Manchester, UK: RCL Ltd.
- Clark LA & Watson D 1995. Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7:309-319.
- Cohen J 1988. *Statistical power analysis for the behavioral sciences*, Revised edn. Orlando, FL: Academic Press.
- Cooper CL & Dewe PJ 2004. *Stress: A brief history*. Oxford, UK: Blackwell Publishing.
- Cooper CL, Dewe P & O'Driscoll M 2001. *Organizational stress: A review of critique of theory, research and applications*. Thousand Oak, CA: Sage.
- Cooper CL, Kirkcaldy, BD, Brown J 1994. A model of job stress and physical health: The role of individual differences. *Personality and Individual Differences*, 16:653-655.
- Cox T & Ferguson E 1991. Individual differences, stress, and coping. In: CL Cooper & R Payne (eds). *Personality and stress: Individual differences in the stress process*. Chichester, UK: Wiley.
- Davey GCL 1994. Trait factors and ratings of controllability as predictors of worrying about significant life stressors. *Personality and Individual Differences*, 16:379-384.
- Dworkin AG, Haney CA, Dworkin RJ & Telschow RL 1990. Stress and illness behavior among urban public school teachers. *Educational Administration Quarterly*, 26:60-72.
- Forsterling F 1988. *Attribution theory in clinical psychology*. Chichester, UK: Wiley.
- Frese M & Zapf D 1999. On the importance of the objective environment in stress and attribution theory: Counterpoint to Perrewe and Zellars. *Journal of Organizational Behavior*, 20:761-766.
- Goldberg DP & Williams P 1988. *A user's guide to the GHQ*. London: NFER, Nelson.
- Greenberg S 1984. *Stress and the teaching profession*. Baltimore, PA: PH Brooks.
- Hartley J, Jacobson D, Klandermans B & Van Vuuren T 1991. *Job insecurity: Coping with jobs at risk*. London: Sage.
- Hu LT & Bentler PM 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6:1-55.
- Jacobs E 2002. Stress takes big toll on teachers. *Pretoria News*, 2 December.
- Jex SM & Beehr TA 1991. Emerging theoretical and methodological issues in the study of work-related stress. *Research in Personnel and Human Resources Management*, 9:311-365.
- Johnson J 2002. A public agenda survey — staying ahead of the game. *Educational Leadership*, 59:26-30.
- Johnson S & Cooper CL 2003. The construct validity of the ASSET stress measure. (In press).
- Jones F & Bright J 2001. *Stress: Myth, theory and research*. Harlow, England: Prentice-Hall.
- Kahn RL & Byosiere P 1992. Stress in organizations. In: MD Dunnette (ed.). *Handbook of industrial and organisational psychology*. Chicago, IL: Rand McNally.
- Kompier AJ & Kristensen TS 2001. Organizational work stress interventions in a theoretical, methodological and practical context. In: J Dunham (ed.). *Stress in the workplace: Past, presence and future*. London: Whurr Publishers.

- Kyriacou C 1981. Social support and occupational stress among school teachers. *Educational Studies*, 7:55-60.
- Lai G, Chan KB, Ko YC & Boey KW 2000. Institutional context and stress appraisal: The experience of life insurance agents in Singapore. *Journal of Asian & African Studies*, 35:209-228.
- Laughlin A 1984. Teacher stress in an Australian setting: The role of biographical mediators. *Educational Studies*, 10:7-22.
- Lazarus RS & Folkman S 1984. *Stress, appraisal, and coping*. New York: Springer.
- Martocchio JJ & O'Leary AM 1989. Sex differences in occupational stress: A meta-analytic view. *Journal of Applied Psychology*, 74:495-501.
- McCormick J 1997. Occupational stress of teachers: Biographical differences in a large school system. *Journal of Educational Administration*, 35:18-38.
- McCormick J & Solman R 1992. Teachers' attributions of responsibility for occupational stress and satisfaction: An organisational perspective. *Educational Studies*, 18:201-222.
- Mestry R 1999. The role of principals in the management of stress and burnout. *Education Practice*, 3:19-23.
- Mills B 2001. Many good teachers have quit in despair because of the OBE system. *Star*, 13 August.
- Mowday RT, Porter LW & Steers RM 1982. *Employee-organisational linkages: The psychology of commitment, absenteeism and turnover*. New York: Academic Press.
- Niehaus L, Myburgh CPH & Kok JC 1995. Selfhandhawingsvermoë van hoërskoolonderwysers. Suid-Afrikaanse Tydskrif vir Opvoedkunde, 15:71-78.
- North West Education Department Statistics 2004. *Number of days used for sick leave, number of teachers using it, and number of resignations*. Potchefstroom: North West Education Department.
- Nunnally JC & Bernstein IH 1994. *Psychometric theory*, 3rd edn. New York: McGraw-Hill.
- Perrewe PL & Zellars KL 1999. An examination of attribution and emotions in the transactional approach to the organisational stress process. *Journal of Organizational Behavior*, 20:739-752.
- Preuss G & Schaeke G 1998. Firefighters exposed to psychomental stress and hazardous work situations. Poster presented at the *Work, Health and Stress Conference*, Institut für Arbeitsmedizin der Freien Universität, Berlin.
- Quail D 2002. Profoundly sad so many teachers are quitting. *Citizen*, 25 July.
- Quick JC, Quick JD, Nelson DL & Hurrell JJ 1997. *Preventative stress management in organizations*. Washington, DC: American Psychological Association.
- Robson C 2002. *Real world research: A resource for social scientists and practitioner-researchers*, 2nd edn. Oxford, UK: Blackwell Publishing.
- SAS Institute 2000. *The SAS System for Windows: Release 8.01*. Cary, NC: SAS Institute Inc.
- Schaufeli WB & Bakker AB 2004. Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behaviour*, 25:1-23.
- Siu OL 2002. Occupational stressors and well-being among Chinese employees: The role of organizational commitment. *Applied Psychology: An International Review*, 5:527-544.
- Steyn HS 1999. Praktiese betekenisvolheid: Die gebruik van effekgroottes [Practical significance: The use of effect sizes]. *Wetenskaplike bydraes – Reeks B: Natuurwetenskappe*, Nr. 117. Potchefstroom: PU vir CHO.
- Travers CJ & Cooper CL 1993. Mental health, job satisfaction and occupational stress among UK teachers. *Work & Stress*, 7:203-219.
- Tytherleigh MV 2003. What employers may learn from English higher education institutions: A fortigenic approach to occupational stress. *SA Journal of Industrial Psychology*, 29:101-106.
- Van Dick R & Wagner U 2001. Stress and strain in teaching: A structural equation approach. *British Journal of Educational Psychology*, 71:43-259.
- Van Horn JE, Schaufeli WB & Enzmann E 1999. Teacher burnout and lack of reciprocity. *Journal of Applied Social Psychology*, 29:91-108.

- Wilson D, Mutero C, Doolabh A & Herzstein M 1990. Type A behaviour and self-reported stress among Zimbabwean teachers. *The Journal of Social Psychology*, 130:115-116.
- Worrall N & May D 1989. Towards a person-in-situation model of teacher stress. *British Journal of Educational Psychology*, 59:174-186.
- Wright LA & Smye MD 1996. *Corporate abuse: How lean and mean robs people and profits*. New York: Macmillan.

Authors

Leon Jackson is Senior Lecturer in the School for Human Resource Sciences at the Potchefstroom campus of the North-West University. He teaches organisational behaviour and supervises postgraduate research in the industrial psychology programme. His research interests are in the field of wellness of employees at work and diversity management.

Sebastian Rothmann is Professor in the Department of Industrial Psychology at the North-West University, Potchefstroom campus, and Programme Leader of the Work Wellness Research Programme in the Workwell Research Unit for People, Policy and Performance. He has published extensively in the areas of work-related well-being, including stress, burnout, and work engagement.