

WORK RELATED WELL-BEING: BURNOUT, WORK ENGAGEMENT, OCCUPATIONAL STRESS AND JOB SATISFACTION WITHIN A MEDICAL LABORATORY SETTING

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This study investigated work-related well-being in a medical laboratory setting. A cross-sectional survey design was used to gather data from a convenience sample of 202 medical laboratory staff (females=35.64%; majority ethnicity=Indian). Participants completed the Burnout Inventory-general Survey (MBI), Utrecht Work Engagement Scale (UWES), Job Demands-Resources Scale (JD-RS) and the revised Minnesota Job Satisfaction Questionnaire (MSQ) was used. Pearson product-moment correlation coefficients were used to specify the relationships between the variables. Structural equation modeling (SEM) was used to test the models of work-related well-being. The results provided support for a four-factorial model of work-related well-being consisting of burnout (exhaustion and cynicism), engagement (vigour and dedication), occupational stress (job demands and lack of job resources) and job satisfaction (intrinsic and extrinsic satisfaction). Job satisfaction characterizes work-related well-being the most and work engagement the least.

Keywords: well-being; occupational well-being; vigour; engagement; cynicism; exhaustion; intrinsic job satisfaction; extrinsic job satisfaction; job demands; job resources

Numerous factors affect work related well-being. Among these are job stress, role stress, stress management, work engagement, burnout and coping. The four constructs that have received significant interest in South Africa are burnout, employee engagement, occupational stress and job satisfaction (Schreuder & Coetzee, 2010). For instance, Rothmann (2008) investigated burnout, work engagement, occupational stress and job satisfaction, as components of work-related well-being in a sample of the police force in South Africa. The results showed support for a four-factorial model of work-related well-being consisting of the following dimensions: burnout (fatigue vs. vigour), engagement (enthusiasm vs. depression), occupational stress (indicating anxiety vs. comfort), and job satisfaction (pleasure vs. displeasure) (Rothmann, 2008). Rothmann (2008) recommended that similar studies should be done in other environments to confirm the robustness of this model. Many other studies have been investigating the relationship between burnout, engagement, occupational stress and job satisfaction over the years (Schaufeli & Bakker, 2004; Van der Colff & Rothmann, 2009; Hoigaard, Giske, & Sundli, 2011). However, none have investigated the relationship between all four variables simultaneously in a medical laboratory environment.

The Medical Laboratory Context

Laboratories provide a unique work environment from the risk for exposure to pathogens and toxins. Further, they may be understaffed and the lack of scarce skills impact on medical laboratories (Cullinan, 2006). These work environment statuses have implications for the staff health and wellbeing (National Health Laboratory Services).

Work-Related Well-Being

Well-being refers to the experience of meaning, behaviour, social relationships and the person's interconnectedness with the environment (Kirsten et al., 2009). Positive and negative affect are associated with wellbeing (Watson & Tellegen, 1985). Positive affect represents the degree to which the individual experiences active elation. Negative affect refers to the degree of unpleasantness felt by the individual.

One of the more popular ways of operationalising the affective dimension of work-related well-being would be to measure it by means of burnout, work engagement, occupational stress and job satisfaction. Burnout represents the vigour-fatigue dimension and work engagement the enthusiasm-depression dimension. The anxiety-comfort dimension is represented by occupational stress and the pleasure-displeasure dimension by job satisfaction (Warr, 2002). These four constructs of work-related well-being may be related but could also be separate dimensions (Warr, 2002). A person may experience their work as difficult and effortful (high displeasure) and may suffer performance anxiety (high anxiety) but still feel enthusiastic about work (Warr, 2002). Similarly, an individual may experience low work related depression (low engagement) but high levels of work-related anxiety (high occupational stress) (Rothmann, 2008).

Maslach, Leiter, and Jackson (2012) conceptualise peoples' psychological relationship to their job as a continuum between the negative experience of burnout (exhaustion, cynicism and inefficacy) and the positive experience of engagement (energy, involvement and efficacy). In other words, engagement represents the desired goal for any burnout intervention (Maslach et al., 2012). Schaufeli, Salanova, Gonzalez-Roma, and Bakker (2002) suggest that burnout and engagement are independent constructs which should be measured separately.

Work engagement is the positive, fulfilling and affective motivational state of work-related well-being (Bakker, Schaufeli, Leiter, & Taris, 2008; Warr & Inceoglu, 2012). The motivational drive leads to the expending of energy even if well-being is being threatened (Warr & Inceoglu, 2012). Work engagement is characterised by vigour, dedication and absorption. Vigour refers to high levels of energy and mental resilience. It is the willingness to invest effort in performing tasks and to persist in the face of obstacles (Bakker et al., 2008; Schaufeli et al., 2002; Schaufeli et al., 2006). Dedication is being strongly involved in work activities and experiencing a sense of significance, pride and challenge (Bakker et al., 2008; Schaufeli et al., 2002; Schaufeli et al., 2006). Absorption is indicative of full concentration and of being happily engrossed in work activities (Bakker et al., 2008; Schaufeli et al., 2002; Schaufeli et al., 2006).

Occupational stress is said to occur when there is a discrepancy between the skills and abilities of the employee and the pressure and demands of the working environment (Eggerth & Cunningham, 2012). It can be conceptualised as a disturbance of the equilibrium between the demands employees are subjected to and the resources they are given (Rothmann, Mostert, & Strydom, 2006). In other words, when demands exceed or fall below the resources, individuals experience undesirable states that hinder their well-being (Harter et al., 2003; Newell, 2002; Treven & Potocan, 2005). Job demands may lead to decreased well-being (Bakker, Demerouti, Nachreiner, & Schaufeli, 2001). Job resources have positive outcomes which may contribute to an increase in well-being (Bakker et al., 2001).

Job demands may become job stressors if the effort levels increase costs (Schaufeli & Bakker, 2004). These high costs could lead to depression, anxiety and burnout (Schaufeli & Bakker, 2004). Job resources are physical, psychological, social or organisational aspects of the job that may reduce job demands and the associated psychological and physical costs. These are instrumental in achieving work goals or encourage personal growth and development (Schaufeli & Bakker, 2004). Job resources not only assist in dealing with job demands but are also important on their own.

Job satisfaction is a pleasurable or positive emotional state resulting from job experience or the appraisal of the job (Tsigilis, Koustelios, & Togia, 2004). This includes remuneration, work relationships, working conditions, job security, promotional prospects, training opportunities and the nature of the job (Warr, 2002). Different aspects of job satisfaction appear to be correlated (Warr, 2002; Tsigilis et al., 2004).

Goals of the Study

The purpose of the current study is to investigate the qualities of work-related well-being in a medical laboratory setting taking into regard burnout, work engagement, occupational stress and job satisfaction.

Method

Participants and Setting

The population comprised of two prominent private laboratories in Durban (KwaZulu-Natal) and Bloemfontein (Free State) respectively. These laboratories operate in both the public and private healthcare spheres. The population of the Durban Laboratories consists of approximately 450 employees whilst the population of the Bloemfontein Laboratories is approximately 150. The core laboratory staff comprises medical technologists, medical technicians, laboratory assistants, pathologists, scientists and laboratory managers. Support staff comprise of laboratory clerks, receiving clerks, data in-put clerks, phlebotomists, quality assurance coordinators, stores clerks, messengers, general workers and drivers. Availability sampling was used as the aim was to target the entire population. The researcher received 202 questionnaires back from staff.

The biographical characteristics of the sample are displayed in Table 1. From Table 1 it can be seen that the sample consisted of 64.36% males and 35.64% females. Of the sample, 35.64% of respondents were white, 42.57% were Indian, 4.46% were coloured and 17.33% were black. Most of the sample respondents (51.49%) were between the ages of 35 and 44, with the second highest group of 27.23% represented by ages of 25 to 34. Of the sample, 29.70% consisted of medical technologists, 32.18% of medical technicians, 5.45% of laboratory assistants, 0.10% of laboratory managers, 9.41% of clerks, 17.33% of phlebotomists/nurses and 4.95% were drivers. None of the questionnaires were returned by pathologists, general workers or scientists.

Measuring Instruments

Aspects of work-related wellbeing were measured using the Maslach Burnout Inventory–General Survey (MBI-GS: Maslach & Jackson, 1981). MBI-GS is a measure of work participation in three dimensions: exhaustion, cynicism and professional efficacy. Items are scored on a seven-point frequency rating scale ranging from never to daily. Internal consistencies reported by Schaufeli et al. (1996) and Storm (2002) varied from 0.87 to 0.89 for exhaustion and 0.73 to 0.84 for cynicism. According to Schaufeli, Salanova, Gonzalez-Roma and Bakker (2002), the test-retest reliabilities after one year were 0.65 for exhaustion and 0.60 for cynicism.

Table 1

Biographical Characteristics of the Sample

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TABLE 1: Biographical characteristics of the sample

VARIABLE	N	%
Gender		
Male	130	64.36
Female	72	35.64
Ethnicity		
White	72	35.64
Black	35	17.33
Indian	86	42.57
Coloured	9	4.46
Age		
Under 25 years	12	5.94
25-34 years	55	27.23
35-44 years	98	51.49
45-54 years	30	14.85
55-64	7	3.47
65 years plus	1	0.50
Occupation		
Medical Technologist	60	29.70
Medical Technicians	65	32.18
Laboratory Assistants	11	5.45
Laboratory	2	0.10
Clerks	19	9.41
Phlebotomists/Nurses	35	17.33
Drivers	10	4.95
Note. N=202		

The Utrecht Work Engagement Scale (UWES: Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002) is a measure of work engagement. It measures the level of engagement on a 17-item-seven-point frequency rating scale, ranging from 0 (never) to 6 (daily). The internal consistencies of this instrument have been acceptable both by international studies and those conducted in South Africa. (Bakker, Schaufeli, Leiter, & Taris, 2008). Schaufeli et al. (2002) as well as Schaufeli, Martinez, Marques-Pinto, Salanova, and Bakker (2002), using confirmative factor analysis, demonstrated the factorial validity of the UWES. Storm and Rothmann (2003) obtained an alpha coefficient of 0.78 for vigour and 0.89 for dedication using a sample of police officers.

The Job Demands-Resources Scale (JDRS: Jackson & Rothmann, 2005) is a measure of occupational stress on two factors, namely: job demand and job resources. The questions are rated on a four-point scale ranging from never to always (Jackson & Rothmann, 2005). For the purposes of this study, job resources were reversed to indicate a measure of lack of job resources. Construct validity was confirmed for all dimensions of job demands and job resources (Rothmann et al., 2006). In this study, the job demands scale showed a cronbach alpha co- efficient of 0.70 and the lack of job resources scale a cronbach alpha coefficient of 0.90.

The Minnesota Job Satisfaction Questionnaire (MSQ: Weiss, Dawis, England, & Lofquist, 1967) indicates how satisfied or dissatisfied respondents are with their jobs. The 20 questions are measured on a 5 point scale varying from very dissatisfied to very satisfied. The revised MSQ measures intrinsic and extrinsic job satisfaction which Rothmann et al. (2005) and Hirschfeld (2000) found superior to the original MSQ. The original MSQ contained a 100 item scale, with 5 items investigating each of the 20 sub-scales (Cook, Hepworth, Wall, & Warr, 1981). It measured extrinsic, intrinsic and general satisfaction (Cook et al., 1981). According to Rothmann et al. (2005), the alpha coefficients for the revised MSQ were 0.84 and 0.89 using a sample of police officers.

Procedure

Ethical clearance to conduct this study was granted to the researcher by the Industrial and Organisational Psychology Departmental Ethics Committee of the University of South Africa. Permission was also granted from the management of the Medical Laboratory. Employees from Durban and Bloemfontein regions were approached to complete the four questionnaires. Employees were briefed on the purpose of study and the procedures involved. This included their confidentiality and voluntary participation in the study. The respondents were required to sign informed consent forms. The researcher and management decided on the appropriate time to administer the questionnaires.

Data Analysis

The SPSS 15.0 programme (SPSS, 2006) and the AMOS programme (Arbuckle, 2006) were used. Descriptive statistics like the mean, median, mode, range, variance and standard deviation were calculated in order to describe the level of work related well-being. Cronbach alpha coefficients were used to measure the internal consistency of the instruments. Pearson product-moment correlation coefficients were used to specify the relationships between the variables. Structural equation modelling (SEM) methods as implemented by AMOS were used to test the models of work-related well-being, using the maximum likelihood method. The Goodness-of-fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Normed Fit Index (NFI), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA) will be used as fit indices (Schumacker & Lamax, 2004).

Results

Descriptive Statistics and Reliability of the Measuring Instruments

Descriptive statistics and Cronbach alpha coefficients for the MBI-GS, UWES, JDRS and MSQ for the medical laboratory staff (N=202) are reported in Table 2. From Table 2 it can be seen that the Cronbach alpha coefficients that were obtained on all the dimensions of the MBI-GS, UWES, JDSR and MSQ, varied from 0.70 to 0.89. Internal consistency scores over 0.70 are considered satisfactory (Leung, 2001; Nunnally, 1978).

Relationship between Burnout, Work Engagement, Occupational Stress and Job Satisfaction

The correlations between the dimensions of the MBI-GS, UWES, JDSR and MSQ for medical laboratory staff (N = 202) are reported in Table 3. Table 3 shows that exhaustion and cynicism are significantly positively related to job demands and lack of resources. Exhaustion and cynicism has a significant negative relationship to intrinsic job satisfaction, extrinsic job satisfaction, vigour and dedication. Vigour and dedication is significantly negatively related to lack of job resources ($p < 0.01$). Both vigour and dedication have a positive relationship to intrinsic and extrinsic job satisfaction ($p < 0.01$). Intrinsic and extrinsic job satisfactions have a significant negative relationship to job demands and lack of resources ($p < 0.01$). Vigour and dedication seems to be positively related to job demand, but the relationships were not significant.

A Structural Model of Work-Related Well-Being

Four models of work-related well-being were tested. Table 4 shows the goodness-of-fit indices for the four models. Model one was a one-factor model, specifying that the four dimensions of work-related well-being form part of one factor (consisting of burnout, work engagement, occupational stress and job satisfaction). The second model tested was a four-factor model specifying that work-related well-being consists of four separate, but related, dimensions, namely fatigue-vigour (i.e., vigour and exhaustion), enthusiasm-depression (i.e., dedication and cynicism), anxiety-comfort (i.e., occupational stress with job demands and lack of job resources) and pleasure-displeasure (i.e., extrinsic and intrinsic job satisfaction). From Table 4 it can be seen that these models did not fit the data well. Thirdly, a four-factor model was tested that specifies that work-related well-being consists of four separate, but related, dimensions, namely fatigue-vigour (i.e., exhaustion and cynicism), enthusiasm-depression (i.e., vigour and dedication), anxiety-comfort (i.e., occupational stress with job demands and lack of job resources) and pleasure-displeasure (i.e., extrinsic and intrinsic job satisfaction). This model showed a negative variance for occupational stress which resulted in an R-square greater than 1. This is referred to as the Heywood problem, a problem caused by a misspecification of the model. In order to correct this misspecification, one could either drop factors from the model or combine factors in the model. In this case it was decided to combine the two factors of occupational stress.

Table 2
Descriptive Statistics and Cronbach Alpha Values of MBI-GSI, UWES, JDSR and MSQ

Variables	M	SD	Skewness	Kurtosis	<i>α</i>
Exhaustion	13.33	8.25	0.18	0.92	0.89
Cynicism	10.33	7.20	0.52	-0.46	0.77
Vigour	27.28	6.70	-1.05	0.78	0.78
Dedication	24.05	6.16	-1.39	2.03	0.86
Job Demands	25.20	3.32	-0.39	0.32	0.70
Lack of Job Resources	54.51	12.60	0.32	-0.62	0.90
Intrinsic Job Satisfaction	45.71	8.22	-0.75	1.06	0.89
Extrinsic Job Satisfaction	20.03	5.32	-0.46	0.09	0.87

Table 3
Correlations Coefficients Between the Dimensions of MBI-GSI, UWES, JDSR and MSQ

Variable		E	C	V	D	JD	LJR	IJS	EJS
Exhaustion (E)	Pearson Correlation Sig. (2-tailed)	1							
Cynicism (C)	Pearson Correlation Sig. (2-tailed)	-0.55** 0.00	1						
Vigour (V)	Pearson Correlation Sig. (2-tailed)	-0.22** 0.00	-0.26** 0.00	1					
Dedication (D)	Pearson Correlation Sig. (2-tailed)	-0.27** 0.00	-0.41** 0.00	0.72** 0.00	1				
Job Demands (JD)	Pearson Correlation Sig. (2-tailed)	0.37** 0.00	0.15* 0.035	0.10 0.88	0.01 0.88	1			
Lack of Job Resources (LJR)	Pearson Correlation Sig. (2-tailed)	0.38** 0.00	0.39** 0.00	-0.31** 0.00	-0.33** 0.00	0.24** 0.00	1		
Intrinsic Job Satisfaction	Pearson Correlation Sig. (2-tailed)	-0.45** 0.00	-0.42** 0.00	0.27** 0.00	0.36** 0.00	-0.32** 0.00	-0.61** 0.00	1	

Extrinsic Job Satisfaction	Pearson Correlation Sig. (2-tailed)	-0.39** 0.00	-0.35** 0.00	0.19** 0.01	0.23** 0.00	-0.38** 0.00	-0.60** 0.00	0.72** 0.00	1
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Note. N=202; ** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).

Table 4
Goodness-of-Fit Indices for Three Models of Work-Related Well-Being

Model	CMIN	CMIN/DF	GFI	AGFI	NFI	TLI	CFI	RMSEA
One-factor Model	7602.22	2.82	0.44	0.44	0.31	0.38	0.40	0.10
Four-factor Model (1)	194.25	12.14	0.82	0.6	0.71	0.51	0.72	0.24
Four-factor model (2)	55.68	3.48	0.94	0.85	0.92	0.90	0.94	0.11
Four-factor model (3)	24.45	2.22	0.97	0.91	0.96	0.96	0.98	0.08

The study attempted to confirm the three models of well-being which Rothmann (2008) tested using a sample of police officers. As mentioned before, a different measuring instrument for occupational stress had to be used in this study instead of the measuring instrument that Rothmann (2008) used. The JDRS used in this current study and the Police Stress Inventory (PSI), used in Rothmann (2008), differ in several ways. Although job demands and lack of job resources are the two factors that are measured in both, the number and nature of the items that make up these factors differ. The PSI was designed specifically for police officers whilst the JDRS was aimed at a wider workforce. It seemed best to combine the two factors of occupational stress, namely job demands and lack of job resources as it was used in this study.

This third four-factor model of work-related well-being, which combined job demand and lack of resources into one factor, fitted the data best (GFI = 0.97, AGFI=0.91, NFI=0.96, TLI = 0.96, CFI=0.98, RMSEA=0.08). This model showed that work-related well-being consists of four separate, but related, dimensions, namely anxiety-comfort (i.e., occupational stress); pleasure – dis- pleasure (i.e., extrinsic and intrinsic job satisfaction); enthusiasm-depression (i.e., vigour and dedication), and fatigue-vigour (i.e., exhaustion and cynicism). Burnout was measured by cynicism and exhaustion, engagement by vigour and dedication, occupational stress by a combined job demands and lack of resources as one dimension and job satisfaction by intrinsic and extrinsic job satisfaction. Figure 1 shows the model of work-related well-being that fitted the data best. Occupational stress loaded strongly negative on work well-being (-0.80). Work engagement loaded moderately positive on work well-being (0.43). Burnout loaded strongly negative on well-being (-0.72) and job satisfaction loaded strongly positive on well-being (0.92) Both vigour (0.76) and dedication (0.95) loaded strongly on work engagement. Exhaustion (0.77) and cynicism (0.72) loaded strongly on burnout. Intrinsic job satisfaction (0.87) and extrinsic job satisfaction (0.83) loaded strongly on overall job satisfaction.

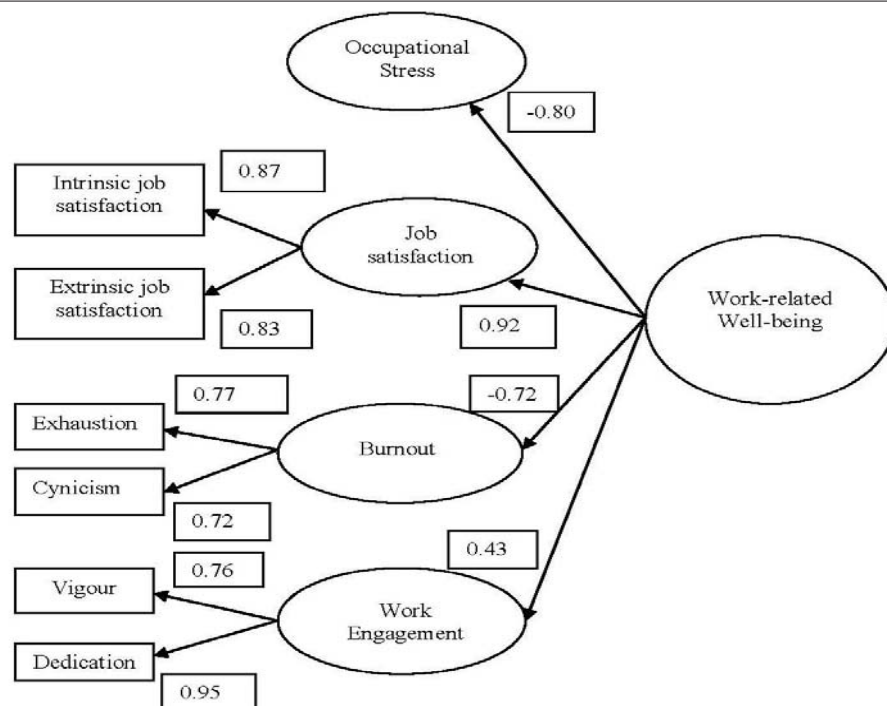
Discussion

The purpose of the current study was to investigate whether work-related well-being could be confirmed to consist of four separate but related factors, namely burnout, work engagement, occupational stress and job satisfaction in a medical laboratory setting.

The results of this study suggest that work-related well-being is best represented by four separate but related factors. The results show support for a four-factorial model of work-related well-being consisting of the following dimensions: burnout (fatigue vs. vigour), engagement (enthusiasm vs. depression), occupational stress (indicating anxiety vs. comfort), and job satisfaction (pleasure vs. displeasure). This model differed from that of Rothmann (2008) as in this model occupational stress was represented as one factor as opposed to two factors (job demand and lack of resources). One of the possible reasons for this discrepancy could be the use of the different instrument.

Burnout and occupational stress had a strongly negative relationship to work-related wellbeing. Job satisfaction had a strongly positive relationship with work related well-being while there was a moderate relationship between engagement and work-related well-being. It appears that in this medical laboratory setting; job satisfaction is the strongest component of well-being. Extrinsic factors like the competence of the employee's supervisor, their remuneration package and recognition for the work done are very important to their well-being. Furthermore, intrinsic factors like deriving value from their work, the status of their jobs and its role when interacting with others, the level of autonomy when exercising their duties and the security of their employment are also critical to their well-being. The level of energy exerted when accomplishing their tasks, the interest level of their jobs and the perceived significance of their jobs are less important predictors of well-being. Similarly, having too much to do, the ability to complete complex tasks under time constraints and resources and support available to complete tasks are less important to well-being. Engagement in the form of meaning and excitement derived from work coupled with the employee's resilience and perseverance in their job is not as strongly related to well-being as are the other constructs. The results differ from those of Rothmann (2008), where burn-out was the strongest related construct, and followed by job satisfaction, then engagement and lastly occupational stress. A working environment for a police officer is vastly different to that of a medical laboratory worker. Police officers deal with the likes of dangerous actions from citizens and organisational inefficiency (Rothmann, 2008). This could explain the difference in the level of importance placed on the constructs in relation to well-being when compared to that in a medical laboratory setting.

Figure 1. Work-related well-being in a medical laboratory setting



Limitations

The sample was restricted to two geographical areas, Durban and Bloemfontein. An availability sampling design was used and therefore the results of this study are not representative of all the laboratory staff in these two laboratories. This study relied on self-report measures. This is a subjective measure and relies on the respondent's interpretation of the questions (Tremblay & Messervey, 2011). Respondents tend to over-report behaviours they deem as appropriate and under-report assumed inappropriate behaviours (Donaldson & Grant-Vallone, 2002). Furthermore, the study involved private laboratories, which may yield a different result when compared to the public laboratories. Not all categories of staff responded to questionnaires. Medical doctors and scientists did not respond. The researcher used the JDRS as opposed to the PSI to measure occupational stress. The use of a discipline-specific instrument may yield different results.

Implications of the Study

Medical laboratories could look at the job satisfaction of their employees. Results indicate that employees already have a high degree of job satisfaction. This could be attributed to the market related remuneration packages employees are offered which appears to be higher than their counterparts in the public laboratories. The employees appear to respect and have confidence in their managers. Coaching and mentoring of staff could ensure that the current support given to employees is maintained. Coaching is an on-going event aimed to improve employees' skills, performance and development. This is a collaborative effort which focuses on providing employees with career and psychological support (Joo, Sushko & McLean, 2012).

Communication is a good resource for wellbeing. It inculcates an environment which encourages opportunities for inter- action and shared values, ensuring intrinsic job satisfaction. Programmes promoting self-care and disease management are also helpful (Ginn & Henry, 2003).

Conclusion

Work-related well-being seems to be characterised by four separate but related factors namely burnout, engagement, job satisfaction and occupational stress. It could therefore be argued that all four these factors should be taken into account when investigating and addressing work-related well-being. However, it seems that the significance of each of these factors in relation to the other, manifest differently in various work environments. Future studies could investigate if this model and the significance of each of the factors in relation to work-related well-being, could be confirmed in other settings as well.

References

- Alarcon, G. M., & Lyons, J. B. (2011). The relationship of engagement and job satisfaction in working samples, *The Journal of Psychology: Interdisciplinary and Applied*, 5(145), 463–480.
- Arbuckle J. L. (1997). *AMOS users' guide version 4.0*. Chicago, IL: Smallwater.
- Babbie, E. (2011). *Introduction to social science* (5th ed.). Belmont, CA: Wadsworth/Cengage Learning.
- Bakker, A. B., Demerouti, E., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86(3), 499–512.
- Bakker, A. B., Schaufeli, W. B., Leiter, M. P., & Taris, T. W. (2008). Work engagement: An emerging concept in occupational health psychology. *Work & Stress*, 22(3), 187–200.
- Beehr, T. A., & Newman, J. E. (1998). Research on occupational stress: An unfinished enterprise. *Personnel Psychology*, 51, 835–844. doi: 10.1111/j.1744-6570.1998.tb00741.x
- Buyis, C., & Rothmann, S. (2010). Burnout and engagement of reformed church ministers. *South African Journal of Industrial Psychology*, 36(1), 1–11.
- Cascio, W., & Boudreau, J. (2011). *Investing in people, financial impact of human resource initiatives* (2nd ed.). Upper Saddle River, NJ: Pearson Education.
- Conrad, P. (1988). Worksite Health Promotion: The social context. *Social Science Medicine*, 26, 485–489.
- Cook, J., Hepworth, S., Wall, T., & Warr, R. (1981). *The experience of work*. New York: Academic Press.
- Cooper, C., & Robertson, I. (2001). *Well-being in organisations: A reader for students and practitioners*. Chichester, UK: John Wiley.
- Crawford, E. R., LePine, J. A., & Rich, B. L. (2010). Linking job demands and resources to employee engagement and burnout: A theoretical extension and meta-analytic test. *Journal of Applied Psychology*, 95(5), 834–848.
- Cullinan, K. (2006, January). Health services in South Africa: A basic introduction. The South African Health News Service. Retrieved from <http://www.health-e.org.za/uploaded/cb1f388f3b351708d915c12cfb4c3cf.pdf>
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86, 499–512.
- De Waal, A. A. (2002). The power of world-class performance management: Use it. *Measuring Business Excellence*, 6(3), 9–19.
- Donaldson, S. I., & Grant-Vallone, E. J. (2002). Understanding self-report bias in organizational behavior research. *Journal of Business and Psychology*, 17(2), 245–260.
- Eggerth, D. E., & Cunningham, T. R. (2012). Counseling psychology and occupational health psychology. In E. M. Altmaier, & J. C. Lansen (Eds.), *The Oxford handbook of counseling psychology* (pp. 753 –779).

Oxford, United Kingdom: Oxford University Press.

Freudenberger, H. J. (1975). The staff burn-out syndrome in alternative institutions. *Psychotherapy: Theory, Research and Practice*, 12(1), 73–82.

George, E., Louw, D., & Badenhorst, G. (2008). Job satisfaction among urban secondary-school teachers in Namibia. *South African Journal of Education*, 28, 135–154.

Ginn, G. O., & Henry, L. J. (2003). Wellness programs in the context of strategic human resource management. *Hospital Topics*, 81(1), 23–28.

González-Roma, V., Schaufeli, W.B., Bakker, A. B., & Lloret, S. (2004). Burnout and work engagement: Independent factors or opposite poles? *Journal of Vocational Behavior*, 68, 165–174.

Hakanen, J. J., Bakker, A. B. & Demerouti, E. (2005). How dentists cope with their job demands and stay engaged: The moderating role of job resources. *European Journal of Oral Sciences*, 113, 479–487.

Harter, J. K., Schmidt, F. L., & Keyes, C. M. (2003). Well-being in the workplace and its relationship to business outcomes: A review of the Gallup Studies. In C. M. Keyes & J. Haidt (Eds.), *Flourishing: The positive person and the good life* (pp. 205–224). Washington, DC: American Psychology Association.

Häsänen, L., Hellgren, J., & Hansson, M. (2011). Goal setting and plant closure: When bad things turn good. *Economic and Industrial Democracy*, 32(1), 135–156.

Hillier, D., Fewell, F., Cann, W., & Shephard, V. (2005). Wellness at work: Enhancing the quality of our working lives. *Internal Review of Psychiatry*, 17(5), 419–431.

Hirschfield, R. R. (2000). Does revising the intrinsic and extrinsic subscales of the Minnesota Satisfaction Questionnaire short form make a difference? *Educational & Psychological Measurement*, 60, 255–270.

Hoigaard, R., Giske, R., & Sundsli, K. (2011). Newly qualified teachers' work engagement and teacher efficacy influences on job satisfaction on job satisfaction, burnout and the intention to quit. *European Journal of Teacher Education*, 35(3), 347–357.

Jackson, L. B., & Rothmann, S. (2005). An adapted model of burnout for educators in South Africa. *South African Journal of Education*, 25(2), 100–108.

Janssen, O. (2001). Fairness perceptions as a moderator in the curvilinear relationships between job demands, and job performance and job satisfaction. *Academy of Management*, 5(44), 1039–1050.

Joo, B. K., Sushko, J. S., & McLean, G. N. (2012). Multiple faces of coaching: Manager-as-coach, executive coaching, and formal mentoring. *Organization Development Journal*, 1(30), 19–38.

Judge, T. A., Heller, D., & Mount, M. K. (2002). Five-factor model of personality and job satisfaction: A meta-analysis. *Journal of Applied Psychology*, 87(3), 530–541.

Kirsten, T. J., Van der Walt, H. L., & Viljoen, J. T. (2009). Health, well-being and wellness: An anthropological eco-systemic approach. *Journal of Interdisciplinary Health Science*, 14(1), 1–7. Leung, W. (2001). *Statistics and evidence-based medicine for examinations*. Berkshire, United Kingdom: LibraPharm.

Luthans, F., Youssef, C. M., & Avolio, B. J. (2007). *Psychological capital*. New York, NY: Oxford University Press.

Mäkikangas, A., Feldt, T., & Kinnunen, U. (2007). Warr's scale of job related affective well-being: A longitudinal examination of its structure and relationships with work characteristics. *Work & Stress*, 21(3), 197–219.

Mansoor, M., Fida, S., Nasir., & Ahmad, Z. (2011). The impact of job stress on employee job satisfaction: A study on telecommunication sector of Pakistan. *Journal of Business Studies Quarterly*, 2(3), 50–56.

Marc, N. (2012). Wellness strategies for smaller businesses. *Benefits Quarterly*, 28(3), 16–19.

Maslach, C. (1993). Burnout: A multidimensional perspective. In W. B. Schaufeli, C. Maslach, & T. Marek, (Eds), *Professional burnout: Recent developments in theory and research* (pp. 19–32). Washington, DC: Taylor & Francis.

Maslach, C., & Jackson, S. E. (1981). *Maslach Burnout Inventory: Manual*. Palo Alto, CA: Consulting Psychologist Press.

Maslach, C., Leiter, M. P., & Jackson, S. E. (2012). Making a significant difference with burnout interventions: Researcher and practitioner collaboration. *Journal of Organizational Behavior*, 33(2), 296–300.

Maslach, C. & Schaufeli, W. B. (1993). Historical and conceptual development of burnout. In W. B. Schaufeli, C. Maslach, & T. Marek (Eds), *Professional burnout: Recent developments in theory and research* (pp.1–16). Washington, DC: Taylor & Francis.

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2005). Job Burnout. *Annual Review of Psychology*, 52(1), 397–442.

National Health Laboratory Services. (n.d.). Retrieved from <http://www.nhls.ac.za/>

Newell, S. (2002). *Creating the healthy organisation, Well-being, diversity & ethics at work*. London, United Kingdom: Thomson.

Noe, R. A., Hollenbeck, J. R., Gerhart, B., & Wright, P. M. (2006). *Human resource management: Gaining a competitive advantage* (5th ed.). Boston, MA: McGraw Hill.

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York, NY: McGraw-Hill.

Ogresta, J., Rusac, S., & Zorec, L. (2008). Relation between burnout syndrome and job satisfaction among mental health workers. *Croatian Medical Journal*, 49(3), 364–374.

Patel, K. A, Rajderkar, S. S., & Naik, J. D. (2012). Occupational stress and burnouts as predictors of job satisfaction amongst lawyers in District Sangli. *National Journal of Medical Research*, 2(1), 141–144.

Petrescu, A. I., & Simmons, R. (2008). Human resource management practices and workers' job satisfaction. *International Journal of Manpower*, 29(7), 651–667.

Rothmann, S. (2003). Burnout and engagement: A South African Perspective. *South African Journal of Industrial Psychology*, 29(4), 16–25.

Rothmann, S. (2008). Job satisfaction, occupational stress, burnout and work engagement as components of work related well-being. *South African Journal of Industrial Psychology*, 34(3), 11–16.

Rothman, S., & Coetzer, E. P. (2002). The relationship between personality dimensions and job satisfaction. *Business Dynamics*, 11(1), 29–42.

Rothmann, S., Mostert, K., & Strydom, M. (2006). A psychometric evaluation of the job demands resources scale in South Africa. *South African Journal of Industrial Psychology*, 32(4), 76–86.

Rothmann, S., Steyn, L. J., & Mostert, K. (2005). Job stress, sense of coherence and work wellness in an electricity supply organisation. *South African Journal of Business Management*, 36(1), 55–63.

Sawang, S. (2011). Is there an inverted U-shaped relationship between job demands and work engagement: The moderating role of social support? *International Journal of Manpower*, 33(2), 178–186.

Schaufeli, W. B. (2003). Past performance and future perspective of burnout. *South African Journal of Industrial Psychology*, 29(4), 1–15.

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources and their relationship with burnout and engagement: a multi-sample study. *Journal of Organisation Behavior*, 25, 293–315.

Schaufeli, W. B., & Enzmann, D. (1998). *The burnout companion to study and practice: a critical analysis*. London: Taylor & Francis.

Schaufeli, W. B., Salanova, M., Gonzalez-Roma, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3(1), 71–92.

Schraeder, M., & Jordan, M. (2011). *Managing Performance: A Practical Perspective on Managing Employee Performance*. *The Journal for Quality and Participation*, 34(2), 4–10.

Schreuder, D., & Coetzee, M. (2010). An overview of industrial and organisational psychology research in South Africa: A preliminary study. *South African Journal of Industrial Psychology*, 36(1), 1–11.

Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modelling* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.

Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). The Maslach Burnout Inventory-General Survey. In C. Maslach, S. E. Jackson, & M. P. Leiter (Eds.), *Maslach Burnout Inventory*. Palo Alto, CA: Consulting Psychologists Press.

Schaufeli, W. B., Martínez, I., Marques-Pinto, A., Salanova, M., & Bakker, A. B. (2002). Burnout and engagement in university students: A cross national study. *Journal of Cross-Cultural Psychology*, 33, 464–481.

Sekaran, U. (2003). *Research methods for business: A skill building approach* (4th ed.). New York: John Wiley.

Sleezer, C. M., & Swanson, R. A. (1992). Culture surveys. *Management Decisions*, 30(20), 22–29.

Spielberger, C. D., Vagg, P. R., & Wasala, C. F. (2003). Occupational stress: Job pressures and lack of support. In J. C. Quick & L. E. Tetrick (Eds.), *Handbook of occupational health psychology* (pp. 185–200). Washington, DC: American Psychological Association.

SPSS Inc. (2006). *SPSS 15.0 for Windows*. Chicago, IL: Author.

Spyridakos, A., Siskos, Y., Yannacopoulos, D., & Skouris, A. (2001) Multicriteria job evaluation for large organizations.

European Journal of Operational Research, 2(130), 375–387.

Storm, K. (2002). *Burnout and engagement in the South African Police Services* (Unpublished doctoral dissertation). Potchefstroom University for Christian Higher Education, Potchefstroom, South Africa.

Storm, K., & Rothmann, S. (2003). A psychometric analysis of the Utrecht Work Engagement Scale in the South African Police Service. *South African Journal of Industrial Psychology*, 29(4), 62–70.

Swider, B.W., Boswell, W. R., & Zimmerman, R. D. (2010). Examining the job search-turnover relationship: The role of embeddedness, job satisfaction and available alternatives. *Journal of Applied Psychology*, 96(2), 432–441.

Travaglione, A., & Marshall, V. (2000). *Human resource strategies: An applied approach*. Sydney, Australia: McGraw-Hill.

Tremblay, M. A., & Messervey, D. (2011). The Job Demands-Resources model: Further evidence for the buffering effect of personal resources. *South African Journal of Industrial Psychology*, 37(2), 1–10.

Treven, S., & Potoèan, V. (2005). Training programmes for stress management in small businesses. *Educational Training*, 47(9), 640–652.

Tsigilis, N., Koustelios, A., & Togia, A. (2004). Multivariate relationship and discriminant validity between job satisfaction and burnout. *Journal of Managerial Psychology*, 19(7), 666–675.

Van der Colff, J. J., & Rothmann, S. (2009). Occupational stress, sense of coherence, coping, burnout and work engagement of registered nurses in South Africa. *South African Journal of Industrial Psychology*, 35(1), 1–10.

Warr, P. (1987). *Work, unemployment and mental health*. New York, NY: Oxford University Press.

Warr, P. (2002). The study of well-being, behaviour and attitudes. In P. Warr (Ed.), *Psychology at work* (pp. 11–25). London, England: Penguin Books.

Warr, P., & Inceoglu, I. (2012). Job engagement, job satisfaction and contrasting associations with person-job fit. *Journal of Occupational Health Psychology*, 17(2), 129–138.

Watkin, C., & Hubbard, B. (2003). Leadership motivation and the drivers of share price: The business case for measuring organisational climate. *Leadership and Organization Development Journal*, 24(7), 380–386.

Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin*, 98(2), 219–235.

Weiss, R., Dawis, G., England, G., & Lofquist, L. (1967). *Minnesota studies in Vocational Rehabilitation 22: Manual for the Minnesota Satisfaction Questionnaire*. Minneapolis, MN: University of Minnesota.

Welman, J. C., & Kruger, S. J. (2001). *Research methodology – for the business and administrative sciences*. Cape Town, South Africa: Oxford University Press.

Wright, T. A., & Cropanzano, R. (2000). Psychological well-being and job satisfaction as predictors of job performance. *Journal of Occupational Health Psychology*, 5(1), 84–94.

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2007). The role of personal resources in the job demands-resources model. *International Journal of Stress Management*, 14, 121–141.