

# **A PSYCHOMETRIC EVALUATION OF THE JOB DEMANDS- RESOURCES SCALE IN SOUTH AFRICA**

Madelyn Strydom, BA Hons.

Mini-dissertation submitted in partial fulfilment of the requirements for the degree *Magister  
Artium in Industrial Psychology* at the North-West University.

**Supervisor:** Prof. S. Rothmann

2005

Potchefstroom

## COMMENTS

The reader must remember the following:

- The editorial style as well as the references submitted in this mini-dissertation follow the format defined by the Publication Manual (5<sup>th</sup> edition) of the American Psychological Association (APA). This practice is in line with the policy of the Programme in Industrial Psychology of the North West University to use the APA style in all scientific documents as from January 1999.
- The mini-dissertation is submitted in the form of a research article. The name of the study leader appears on the manuscript as it was submitted for publication.

## ACKNOWLEDGEMENTS

I would like to thank the following people for their contribution and motivation:

- The one person I believe in most, the Lord, who gave me this great opportunity and who blessed me with the ability to complete this research project.
- Prof. S Rothmann, for not giving up on me and for his continuous support and patience. Thank you for always being an inspiration to me.
- Prof. S Rothmann, for spending so much time to give me such valuable results in the statistical analysis.
- Thank you to all the participants.
- My family, who gave me all their support, and for believing in me.
- My friends and colleagues (students), for your support.
- Willie Cloete, for the language editing.

# TABLE OF CONTENTS

	<b>Page</b>
Comments	i
Acknowledgements	ii
List of tables	iv
List of figures	v
Abstract	vi
Opsomming	viii
<b>CHAPTER 1: INTRODUCTION</b>	<b>1</b>
1.1 Problem statement	1
1.2 Research objectives	4
1.2.1 General objective	4
1.2.2 Specific objectives	5
1.3 Research method	5
1.3.1 Literature review	5
1.3.2 Empirical study	5
1.3.2.1 Research design	5
1.3.2.2 Participants	5
1.3.2.3 Measuring instrument	6
1.3.2.4 Statistical analysis	6
1.4 Division of chapters	7
1.5 Chapter summary	7
References	8
<b>CHAPTER 2: RESEARCH ARTICLE</b>	<b>10</b>
<b>CHAPTER 3: CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS</b>	
3.1 Conclusions	42
3.2 Limitations	45
3.3 Recommendations	45
3.3.1 Recommendations for the organisations	45
3.3.2 Recommendations for future research	46
References	47

## LIST OF TABLES

<b>Table</b>	<b>Description</b>	<b>Page</b>
Table 1	Characteristics of the Participants	20
Table 2	Principal Component Analysis with a Varimax Rotation on the Pooled Solution	25
Table 3	Principal Component Analysis with Varimax on the Individual Groups	26
Table 4	Tucker's Phi Coefficients of the Factors of the JDRS	30
Table 5	Descriptive Statistics, Alpha Coefficients and Pearson Correlations of the JDRS	31
Table 6	MANOVA with Occupation/Organisation as Independent Variable and Job Demands and Resources as Dependent Variables	32
Table 7	Means and Standard Deviations of Job Demands and Resources	32

## LIST OF FIGURES

<b>Figure</b>	<b>Description</b>	<b>Page</b>
1	The effects of job demands and job resources	17
2	Scree plot of the JDRS	23

## ABSTRACT

**Subject:** A psychometric evaluation of the Job Demands-Resources Scale in South Africa.

**Keywords:** Job demands, job resources, validity, equivalence, reliability.

Although different occupations/organisations have unique work characteristics, it seems possible to divide them into two categories, namely job demands and job resources. A valid, equivalent and reliable instrument is needed to measure job demands and resources and to compare them among different occupations/organisations. The aim of this study was to investigate the construct equivalence, validity and reliability of a measuring instrument of job demands and resources and to assess the differences between the job demands and job resources in various occupations/organisations in South Africa.

A cross-sectional survey design was used. A stratified random sample ( $N = 2717$ ) was taken from a population consisting of employees in various occupations and organisations. The occupations/organisations included academics (higher education institutions), staff at a university of technology, correctional officers, insurance staff and engineers. The Job Demands-Resources Scale (JDERS) was used to assess job demands and job resources in the different occupations/organisations. Descriptive statistics, exploratory factor analysis, reliability analysis and multivariate analysis of variance were used to analyse the data.

Five reliable factors were extracted using principal component analysis, namely: overload, growth opportunities, organisational support, advancement and job insecurity. The results showed that the structure of job demands and job resources in the different occupations/organisations were equivalent, with the exception of one factor, namely organisational support.

Engineers showed higher scores on overload and growth opportunities than occupations/organisations. Academics in higher education institutions also experienced more growth opportunities than other groups. Engineers, academics in higher education institutions and employees in the insurance industry reported higher levels of organisational support than correctional officers and employees at a university of technology. Engineers obtained the

highest score on advancement, while academics in higher education institutions obtained the lowest scores. Job insecurity was the highest for correctional officers and employees of a university of technology, and the lowest for engineers.

Recommendations for future research were made.

## OPSOMMING

**Onderwerp:** 'n Psigometriese evaluering van die Werkseise-Hulpbronne-skaal in Suid-Afrika.

**Sleutelwoorde:** Werkseise, werkshulpbronne, geldigheid, ekwivalensie, betroubaarheid

Alhoewel verskillende beroepe/organisasies hul eie unieke werkskenmerke het, is dit moontlik om twee kategorieë, naamlik werkseise en werkshulpbronne te onderskei. 'n Betroubare, geldige en ekwivalente meetinstrument is noodsaaklik om werkseise en hulpbronne te meet en tussen verskillende beroepe/organisasies te vergelyk. Die doelstelling van hierdie studie was om ondersoek in te stel na die konstrukekwivalensie, konstrugeldigheid en betroubaarheid van 'n meetinstrument van 'n werkseise en -hulpbronne en om die verskille tussen die werkseise en werkshulpbronne in verskillende beroepe/organisasies in Suid-Afrika te bepaal.

Daar is gebruik gemaak van 'n dwarsnee-opnameontwerp. 'n Gestratifiseerde, ewekansige steekproef ( $N = 2717$ ) is geneem van 'n populasie bestaande uit werknemers in verskillende beroepsgroepe en organisasies. Die beroepe/organisasies het die volgende ingesluit: akademië (hoëronderrysinstellings), werknemers van 'n universiteit van tegnologie, personeel van korrektiewe dienste, versekeringspersoneel en ingenieurs. Die Werkseise-Hulpbronne-skaal (JDERS) is gebruik om werkseise en werkshulpbronne in die verskillende beroepe/organisasies te bepaal. Beskrywende statistiek, verkennende faktoranalise, alfakoëffisiënte en meervoudige variansie-analise is gebruik om die data te ontleed.

Vyf betroubare faktore is met behulp van hoofkomponentanalise onttrek, te wete: oorlading, groeigeleenthede, organisasie-ondersteuning, geleenthede om vooruit te gaan, en werksonsekerheid. Die resultate het aangetoon dat die struktuur van werkseise en werkshulpbronne in die verskillende beroepe/organisasies ekwivalent is, met die uitsondering van een faktor, naamlik organisasie-ondersteuning.

Ingenieurs het hoër tellings op oorlading en groeigeleenthede as ander beroepe/organisasies getoon. Akademië in hoër opvoedkundige instellings het ook meer groeigeleenthede as ander groepe waargeneem. Ingenieurs, akademië in hoër opvoedkundige instellings en werknemers

in die versekeringsbedryf het hoër tellings ten opsigte van organisasie-ondersteuning getoon as korrektiewe beamptes en werknemers by 'n universiteit van tegnologie. Ingenieurs het die hoogste telling op geleenthede om te vorder getoon, terwyl akademici in hoër opvoedkundige instellings die laagste telling op hierdie dimensie getoon het. Werksonsekerheid was die hoogste vir korrektiewe beamptes, en werknemers in 'n universiteit van tegnologie.

Aanbevelings is toekomstige navorsing is aan die hand gedoen.

# **CHAPTER 1**

## **INTRODUCTION**

This mini-dissertation is about the psychometric evaluation of the Job Demands-Resources Scale (JDRS).

In Chapter 1, the motivation for the research is discussed in terms of the problem statement and the aims for the research. Thereafter, the research method and the division of the chapters are discussed.

### **1.1 PROBLEM STATEMENT**

Work plays an important part in the lives of most people. People work to express themselves through their work activities (Rothmann & Cilliers, 2004). Work needs to be a challenge to people in order for them to express something of themselves through their work activities. This means that work should be structured in such a way that a person needs to apply his/her abilities and skills to his/her job. People need to be given the opportunity to act on their own, without constantly being watched.

People attach a personal and unique value to work. Work, however, often creates ambivalent feelings because of the demands and resources present in most jobs (Rothmann, 2003). Furthermore, a new set of future values emerges, based on a balance between job satisfaction and leisure, family and personal freedom. These new values imply increased self-interest, loyalty to self, and no longer to the organisation, growing demands for participation, and an accelerating culture of entitlement (Rothmann & Cilliers, 2004).

South Africa has undergone major changes since becoming a democracy. Organisations, professions and individuals had to adapt to new challenges (Montgomery, 2003). Recent developments in the world of work are the increased utilisation of information and communication technology, the rapid expansion of the service sector, the globalisation of the economy, the changing structure of the workforce, the increasing flexibilisation of work, the creation of the 24-hour economy, and the application of new production concepts. Modern employees, compared to employees from a few years back, increasingly work in offices (and

less in agriculture or industry), with information or clients (and less with tangible objects), in teams (and less in isolation), but with less job security. More mental and emotional demands have replaced manual demands (Barling, 1999; Turner, Barling, & Zacharatos, 2002). Work has become more client-driven and dependent on information technology (Merlliè & Paoli, 2001). Cooper (1999) showed that employees regularly work more than their contracted hours per week.

Employment relationships have changed dramatically – in terms of the type of work that people do, when they work, and how much work they do (Barling, 1999). Some employees also face diminished choice and control in that they are forced to take on hours and working arrangements that are against their preferences (Turner et al., 2002). Additional unpredictability results as many employers move toward greater flexibility by expanding and shrinking the workforce to correspond with shifting production and service demands, resulting in a loss of control over working hours, and in a sense of job insecurity (Martin, 1997).

Research conducted over the past few years has indicated that work might have an impact on the well-being of employees. Two theoretical models could be used to understand the effects of work on the work-related well-being of employees. First, according to the holistic model of work-related well-being (Nelson & Simmons, 2003), work might lead to distress (e.g. burnout) or eustress (e.g. engagement). Second, according to the dual-process model (Schaufeli & Bakker, 2004), job demands and job resources might impact on physical health, psychological well-being and organisational commitment through certain mediators (i.e. burnout and work engagement).

It has been indicated on various occasions that job demands and job resources seem to be important causes of work-related well-being (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Schaufeli & Bakker, 2004). However, certain predictors of well-being may differ within various working environments, depending on the unique demands and resources that exist in the specific work context.

It seems evident that every occupation has its own specific risk factors that contribute to well-being. For example, burnout of employees in call centres is primarily caused by dissonance between their real feelings and those that may be shown to clients (Zapf, Vogt, Seifert,

Mertini, & Isic, 1999), while a combination of work overload and lack of autonomy seems to be the main problem for production workers (De Jonge & Kompier, 1997). For medical practitioners, patient demands are the most important determinant of burnout (Bakker, Schaufeli, Sixma, Bosveld, & Van Dierendonck, 2000), while interaction with learners is the most important determinant of burnout for educators (Van Horn, Schaufeli, & Enzmann, 1999). Little scientific information exists regarding the job demands and resources in different organisations and occupations in South Africa.

According to Schaufeli (2003), instead of explaining burnout, organisational approaches describe what types of organisational variables are related to well-being. Such heuristic models have received some – largely cross-sectional – empirical support. However, an exception has to be made for the Job Demands-Resources model, which assumes that two underlying psychological processes play a role in work-related well-being: an effort-driven process in which excessive job demands and a lack of job resources lead to distress, and a motivation-driven process in which job resources lead to work engagement (Demerouti et al., 2001; Schaufeli & Bakker, 2004). However, research is needed regarding the job demands and resources in different occupations and organisations.

A valid and reliable instrument is needed to measure job demands and resources and to compare them in different occupations/organisations. Although Jackson and Rothmann (2005) developed a questionnaire to measure job demands and resources, the psychometric properties of this instrument have not yet been investigated in different occupations and organisations. Furthermore, before the job demands and resources in different occupations and organisations can be compared, it is necessary to assess the construct equivalence (factorial invariance) of the measuring instrument in these contexts. If cultural influences are not accounted for, invalid conclusions regarding the constructs under study could be made – with serious implications for diverse organisational settings (Van de Vijver & Leung, 1997). *Construct equivalence* indicates the extent to which the same construct is measured across the cultural groups under study; in other words, the comparison of cultural groups, seeing that their scores are related to the same construct. In the case of construct inequivalence, no comparison can be made, as scores obtained are not related to the same construct (Van de Vijver & Leung, 1997).

According to Rothmann (2005), organisations experience different types of demands and resources. It is evident that the insurance industry has expanded dramatically (Chan, 2002). It seems that correctional staff experiences high workload and a lack of control. Production workers seem to experience high workload and a lack of autonomy (De Jonge & Kompier, 1997).

No research up to now have been done comparing different organisations and occupations on the different types of job demands and job resources in South Africa. The aims of this study are to investigate the construct equivalence and reliability of a measuring instrument of job demands and resources, and to assess the differences between the job demands and resources in different occupations and organisations in South Africa. The information gathered in this study will provide great insight into the work characteristics in various organisations and occupations.

The following research questions emerge from the problem statement:

- How are job demands and job resources conceptualised in the literature?
- What are the psychometric properties of a measure of job demands and job resources in different occupations/organisations?
- Do perceptions of job demands and job resources differ in selected occupations/organisations in South Africa?

## **1.2 RESEARCH OBJECTIVES**

The research objectives of this study consist of a general objective and specific objectives.

### **1.2.1 General objective**

The general objective of this study is to assess the psychometric properties of a measure of occupations/organisations in different occupations/organisations and to study the differences between job demands and job resources in selected South African occupations/organisations.

## **2.2 Specific objective**

The specific objectives of this study are as follows:

- To conceptualise job demands and job resources from the literature.
- To assess the psychometric properties of a measure of job demands and job resources in South African occupations/organisations.
- To investigate the differences in the perceptions of job demands and job resources in selected occupations/organisations in South Africa.

## **1.3 RESEARCH METHOD**

The research method consists of a literature review and an empirical study.

### **1.3.1 Literature Review**

A complete literature review regarding job demands and job resources is obtained.

### **1.3.2 Empirical Study**

The empirical study comprises the research design, the participants, the measuring instrument, and the statistical analysis.

#### **1.3.2.1 Research design**

A cross-sectional survey design will be used, by means of which a sample is drawn from a population at a particular point in time (Shaughnessy & Zechmeister, 1997). The information that is collected, will be used to describe the population.

#### **1.3.2.2 Participants**

A stratified, random sample ( $N = 2717$ ) of employees in different working groups and environments will be taken. The participants consist of employees in the insurance industry,

the engineering industry, and in correctional services, as well as staff members at a university of technology, and academics within higher education institutions.

### **1.3.2.3 Measuring instrument**

The *Job Demands-Resources Scale* (JDERS) will be used as a measuring instrument in this study. The JDERS was developed by Jackson and Rothmann (2005) to measure job demands and job resources. The scale was developed based on a literature review as well as interviews with participating groups in this study. Items were developed and checked for face validity. The JDERS consists of 48 items about pace and amount of work, mental load, emotional load, variety in work, opportunities to learn, independence in work, relationships with colleagues, relationship with immediate supervisor, ambiguities about work, information, communications, participation, contact possibilities, uncertainty about the future, remuneration and career possibilities. The items are rated on a four-point scale ranging from 1 (*never*) to 4 (*always*). According to Jackson and Rothmann (2005) the JDERS consists of seven reliable factors, namely organisational support ( $\alpha = 0,88$ ), growth opportunities ( $\alpha = 0,80$ ), overload ( $\alpha = 0,75$ ), job insecurity ( $\alpha = 0,90$ ), relationship with colleagues ( $\alpha = 0,76$ ), control ( $\alpha = 0,71$ ), and rewards ( $\alpha = 0,78$ ). Barkhuizen and Rothmann (in press) found four reliable factors, namely overload ( $\alpha = 0,70$ ), growth and advancement ( $\alpha = 0,85$ ), structure and relationships ( $\alpha = 0,92$ ) and job insecurity ( $\alpha = 0,90$ ).

### **1.3.2.4 Statistical analysis**

The statistical analysis will be carried out with the SPSS program (SPSS Inc., 2003). Descriptive statistics will be used to explore the data. Construct equivalence of the JDERS for different organisations will be computed. Factor analysis is the most frequently employed technique for studying construct equivalence.

Exploratory factor analyses will be conducted and Cronbach alpha coefficients calculated to assess the validity and reliability of the constructs measured in this study. Exploratory factor analyses will be carried out to investigate the construct validity of the measuring instruments, following a two-step procedure. First, a simple principal component analysis will be conducted on the constructs that form part of the measurement model, namely job demands

and resources. The eigenvalues and scree plot will be studied to determine the number of factors. Second, a principal component analysis with a direct oblimin rotation will be conducted if factors were related, and a principal component analysis with a varimax rotation will be used if the obtained factors are not related (Tabachnick & Fidell, 2001).

Pearson product-moment correlation coefficients will be used to specify the relationship between the variables. In terms of statistical significance, it was decided to set the value at a 95% confidence interval level ( $p < 0,05$ ). Effect sizes (Steyn, 1999) will be used to decide on the practical significance of the findings. A cut-off point of 0,30 (medium effect, Cohen, 1988) is set for the practical significance of correlation coefficients.

Multivariate analysis of variance (MANOVA) will be used to investigate the significance of differences between job demands and job resources in different occupational/organisational groups. MANOVA tests whether mean differences among groups on a combination of dependent variables are likely to have occurred by chance (Tabachnick & Fidell, 2001). In MANOVA, a new dependant variable that maximises group differences was created from the set of dependent variables. One-way analysis of variance will be performed on the newly created dependent variable. Wilks' lambda will be used to test the significance of the effects.

#### **1.4 DIVISION OF CHAPTERS**

The chapters are presented as follows in this mini-dissertation:

Chapter 1: Introduction

Chapter 2: Research article

Chapter 3: Conclusions, limitations and recommendations.

#### **1.5 CHAPTER SUMMARY**

In this chapter, the problem statement and objectives of research were discussed. The measuring instrument and research method were explained. The statistical analysis was described. A research article on the psychometric evaluation of the Job Demands-Resources Scale in South Africa is presented in Chapter 2.

## References

- Barkhuizen, N., & Rothmann, S. (in press). *Work wellness of academic staff in South African higher education institutions*. Manuscript submitted for publication.
- Barling, J. (1999). Changing employment relations: Empirical data, social perspectives and policy options. In D. B. Knight & A. Joseph (Eds.), *Restructuring societies: Insights from the social sciences* (pp. 59-82). Ottawa: Carlton University Press.
- Chan, K. B. (2002). Coping with work stress, work satisfaction and social support: An interpretive study of life insurance agents. *Journal of Social Sciences*, 30, 657-685.
- Cohen, J. (1988). *Statistical power analysis for the behavioral science* (2<sup>nd</sup> ed.). Hillsdale, NJ: Erlbaum.
- Cooper, C. L. (1999). The changing psychological contract at work. *European Business Journal*, 11, 115-118.
- De Jonge, J., & Kompier, M. A. J. (1997). A critical examination of the Demand-Control-Support model from a work psychological perspective. *International Journal of Stress Management*, 4, 235-258.
- 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.
- Jackson, L. T. B., & Rothmann, S. (2005). Work-related well-being of educators in a district of the North West Province. *Perspectives in Education*, 23, 107-122.
- Martin, P. (1997). *The sickening mind: Brain, behaviour, immunity and disease*. London: HarperCollins.
- Merlliè, D., & Paoli, P. (2001). *Ten years of working conditions in the European Union: Summary*. Dublin: European Science Foundation.
- Montgomery, A. J. (2003). *Burnout of primary school teachers in the North West Province*. Unpublished master's dissertation, Potchefstroom University for CHE, Potchefstroom.
- Nelson, D. L., & Simmons, B. L. (2003). Health psychology and stress: A more positive approach. In J. C. Quick & L. E. Tetrick (Eds.), *Handbook of occupational health and psychology* (pp. 97-117). Washington, DC: American Psychological Association.
- Rothmann, S. (2003). Burnout and engagement: A South African perspective. *South African Journal of Industrial Psychology*, 29(4), 16-25.
- Rothmann, S. (2005, August 23). *Occupational stress, organizational commitment and ill health in South African organizations*. Paper presented at the 2<sup>nd</sup> ICOH International Conference on Psychosocial Factors at Work, Okayama, Japan.

- Rothmann, S., & Cilliers, F. V. N. (2004, May 28). *Shifting the boundaries of knowledge: The contribution of industrial psychology*. Paper presented at the National Research Foundation Conference, Tshwane University of Technology, Pretoria.
- Schaufeli, W. B. (2003). Past performance and future perspectives of burnout research. *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 Organizational Behavior*, 25, 1-23.
- Shaughnessy, J. J., & Zechmeister, E. B. (1997). *Research methods in psychology* (4<sup>th</sup> ed.). New York: McGraw-Hill.
- SPSS Inc. (2003). *SPSS 12.0 for Windows*. Chicago, IL: Author.
- Steyn, H. S. (1999). *Praktiese betekenisvolheid: Die gebruik van effekgroottes*. Wetenskaplike bydrae – Reeks B: Natuurwetenskappe Nr 1170, Potchefstroom: PU vir CHO.
- Tabachnick B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4<sup>th</sup> ed.). Boston, MA: Allyn & Bacon.
- Turner, N., Barling, J., & Zacharatos, A. (2002). Positive psychology at work. In C. R. Snyder & S. J. Lopez (Eds.). *Handbook of positive psychology*. (pp. 715-728). Oxford: Oxford University Press.
- Van de Vijver, F., & Leung, K. (1997). *Methods and data analysis for cross-cultural research*. Thousand Oaks, CA: Sage.
- Van Horn, J. E., Schaufeli, W. B., & Enzmann, E. (1999). Teacher burnout and lack of reciprocity. *Journal of Applied Social Psychology*, 29, 91-108.
- Zapf, D., Vogt, C., Seifert, C., Mertini, H., & Isic, A. (1999). Emotion work as a source of stress: The concept and development of an instrument. *European Journal of Work and Organizational Psychology*, 8, 371-400.

## **CHAPTER 2**

### **RESEARCH ARTICLE**

# A PSYCHOMETRIC EVALUATION OF THE JOB DEMANDS-RESOURCES SCALE IN SOUTH AFRICA

M. STRYDOM

S. ROTHMANN

K. MOSTERT

*WorkWell: Research Unit for People, Policy and Performance, North-West University,  
Potchefstroom*

## ABSTRACT

The aims of this study were to investigate the construct validity, construct equivalence and reliability of a measuring instrument of job demands and resources, and to assess the differences between the job demands and resources in different occupations/organisations in South Africa. A cross-sectional survey design was used. A stratified, random sample ( $N = 2717$ ) of employees in different occupational groups and organisations was taken. Five reliable factors were extracted using principal component analysis with a varimax rotation, namely overload, growth opportunities, organisational support, advancement, and job insecurity. All factors, except organisational support, showed acceptable equivalence for different occupations/organisations. Engineers experienced more growth opportunities, organisational support, advancement, and overload. Correctional services staff experienced the highest levels of job insecurity.

## OPSOMMING

Die doel van hierdie studie was om ondersoek in te stel na die konstrukekwivalensie, konstrugeldigheid en betroubaarheid van 'n meetinstrument van werkseise en -hulpbronne, en om die verskille tussen werkseise en -hulpbronne in verskillende beroepe/organisasies in Suid-Afrika te bepaal. 'n Dwarsnee-opnameontwerp is gebruik. 'n Gestratifiseerde, ewekansige steekproef ( $N = 2717$ ) is geneem van werknemers in verskillende beroepsgroepe en organisasies. Vyf betroubare faktore is met behulp van hoofkomponentanalise met 'n varimax-rotasie onttrek, naamlik oorlading, groei-geleenthede, organisasie-ondersteuning, geleenthede om vooruit te gaan, en werks-onsekerheid. Alle faktor, behalwe organisasie-ondersteuning, het aanvaarbare ekwivalensie getoon vir verskillende beroepe/organisasies. Ingenieurs het meer groei-geleenthede, organisasie-ondersteuning, geleenthede om vooruit te gaan, en oorlading ervaar. Personeel van korrektiewe dienste het die hoogste vlakke van werks-onsekerheid ervaar.

Work plays a central role in the lives of most people and many people use work-related activities to express themselves. In order for work to challenge people, it should be structured in such a way that a person needs to apply their abilities and skills to their job. People also need to be given the opportunity to act on their own, without constantly having someone peering over their shoulders to see whether they are carrying out their tasks in the correct manner. Furthermore, a new set of future values emerges, based on a balance between job satisfaction and leisure, family and personal freedom. These new values imply increased self-interest, loyalty to self, and no longer to the organisation, growing demands for participation, and an accelerating culture of entitlement (Rothmann & Cilliers, 2004).

Over the last few decades, the occupational arena has undergone extraordinary changes. Part of these developments are the increased utilisation of information and communication technology, the rapid expansion of the service sector, the globalisation of the economy, the changing structure of the workforce, the increasing flexibilisation of work, the creation of the 24-hour economy, and the application of new production concepts. Compared to twenty years ago, modern employees increasingly work in offices (and less in agriculture or industry), with information or clients (and less with tangible objects), in teams (and less in isolation), but with less job security. The nature of work has also changed from manual demands to more mental and emotional demands (Barling, 1999; Turner, Barling, & Zacharatos, 2002).

Recently, employment relationships have changed dramatically, adjusting the type of work that people do, when they work, and how much work they do (Barling, 1999). Some employees face diminished choice and control in that they are forced to take on hours and working arrangements that are against their preferences (Turner et al., 2002). Additional unpredictability results as many employers move toward greater flexibility by expanding and shrinking the workforce to correspond with shifting production and service demands, resulting in a loss of control over working hours, and in a sense of job insecurity (Martin, 1997).

Work might impact on the well-being of employees. Two theoretical models could be used to understand the effects of work on the work-related well-being of employees. First, according to the *holistic model of work-related well-being* (Nelson & Simmons, 2003), work might lead to distress (e.g. burnout) or eustress (e.g. engagement). Second, according to the *dual-process*

*model* (Schaufeli & Bakker, 2004), job demands and job resources might affect physical health, psychological well-being and organisational commitment through certain mediating factors (i.e. burnout and work engagement).

Job demands and job resources seem to be important causes of work-related well-being (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Schaufeli & Bakker, 2004). The determinants of well-being may differ within various working environments, depending on the unique demands and resources that exist in the specific work context. Furthermore, it seems that every occupation has its own specific risk factors regarding well-being. For example, burnout of employees in call centres is primarily caused by dissonance between their real feelings and those that may be shown to clients (Zapf, Vogt, Seifert, Mertini, & Isic, 1999), while a combination of work overload and lack of autonomy seems to be the main problem for production workers (De Jonge & Kompier, 1997). For educators, interaction with learners is the most important determinant of burnout (Van Horn, Schaufeli, & Enzmann, 1999). Little scientific information exists regarding the job demands and resources in different organisations and occupations in South Africa.

Various models have been tested with regard to job demands, job resources and work-related well-being. Karasek (1979) developed the *Job Demands-Control model* as an approach to job stress. The assumption of this model is that effective job control or decision-making is an important resource that could moderate the negative effects of job stress (Karasek & Theorell, 1990). Therefore, increasing job control could reduce the occurrence of job strain. The *Job Characteristics model* (Hackman & Oldham, 1980) assumes that there is a linear relationship between job characteristics and employee well-being. If an employee has freedom in his/her work, he/she will experience more work-related well-being. According to the *Vitamin model* (Warr, 1987), mental health can be affected by environmental factors such as job characteristics.

Although the above-mentioned models might be useful to explain the effect of job characteristics on well-being, studies have reported problems with these models (De Jonge & Kompier, 1997; Terry & Jimmieson, 1999). For example, most of the models use organisational approaches to investigate work-related well-being, which are usually descriptive in nature; that is, instead of *explaining* work-related well-being, they *describe* what types of organisational variables are related to well-being (Schaufeli, 2003). Although

such heuristic models have received some empirical support, this is largely of a cross-sectional nature.

An exception has to be made for the *Job Demands-Resources model*, which assumes that two underlying psychological processes play a role in work-related well-being: an effort-driven process in which excessive job demands and a lack of job resources lead to distress, and a motivation-driven process in which job resources lead to work engagement (Demerouti et al., 2001; Schaufeli & Bakker, 2004). Although several international studies used this model to explain the influence of job demands and resources on well-being (e.g. Bakker, Demerouti, & Schaufeli, 2003; Bakker, Demerouti, Taris, Schaufeli, Schreurs, 2003; Schaufeli & Bakker, 2004), research is needed regarding the job demands and resources in different occupations and organisations in South Africa.

A valid and reliable instrument is needed to measure job demands and job resources and to compare them in different occupations/organisations. Although Jackson and Rothmann (2005) developed a questionnaire to measure job demands and resources, the psychometric properties of this instrument have not yet been investigated in different South African occupations and organisations. Furthermore, before the job demands and resources in different occupations and organisations can be compared, it is necessary to assess the construct equivalence (factorial invariance) of the measuring instrument in these contexts. If cultural influences (inherent in different occupations and organisations) are not accounted for, invalid conclusions regarding the constructs under study could be made – with serious implications for diverse organisational settings (Van de Vijver & Leung, 1997). *Construct equivalence* indicates the extent to which the same construct is measured across the cultural groups under study; in other words, the comparison of cultural groups, seeing that their scores are related to the same construct. In the case of construct inequivalence, no comparison can be made, as scores obtained are not related to the same construct (Van de Vijver & Leung, 1997).

### **The Job Demands-Resources model**

Demerouti et al. (2001) developed the Job Demands-Resources (JD-R) model. One central assumption of the JD-R model is that, although every occupation may have its own specific

work characteristics associated with well-being, it is still possible to model these characteristics in two broad categories, namely job demands and job resources.

*Job demands* represent aspects of the job that could potentially cause strain in cases where they exceed the employee's adaptive capability. More specifically, job demands refer to those physical, social or organisational aspects of the job that require sustained physical and/or psychological (i.e. cognitive or emotional) effort on the part of the employee and that are therefore associated with certain physiological and/or psychological costs (e.g. exhaustion) (Hockey, 1997). Job demands are not negative, but may lead to job stress when employees are confronted by demands which require effort when they have not recovered from stress caused by previous demands (Meijman & Mulder, 1998). Karasek (1979) identifies various influential demands and recognises a restricted definition of job demands that are mainly quantitative in nature, such as workload and time pressure. The JD-R model supports this view by recognising that demanding characteristics of the working environment, work pressure, overload, emotional demands, and poor environmental conditions may lead to the impairment of health and ultimately to absenteeism (Schaufeli & Bakker, 2004; Semmer, Zapf, & Dunckel, 1995; Zapf et al., 1999).

*Job resources* concern the extent to which the job offers *assets/opportunities* to individual employees. Job resources refer to those physical, psychological, social or organisational aspects of the job that: (1) reduce job demands and the associated physiological and psychological costs, (2) are functional in achieving work goals, and/or (3) stimulate personal growth, learning, and development (Demerouti et al., 2001). Thus, resources are not only necessary to deal with job demands, but also are important in their own right (Elsass & Veiga, 1997; Ganster & Fusilier, 1989; Hobfoll, 2001; Terry & Jimmieson, 1999).

Job resources have been recognised by Kahn (1990) as characteristics of work situations that shape the degree to which people employ and express themselves physically, cognitively, and emotionally during role performance. According to Hackman and Oldham (1980), specific job characteristics motivate employees. These job characteristics induce so-called critical psychological states (e.g. meaningfulness), which drive people's attitudes and behaviours. Examples of job resources are time control, performance feedback, a supportive leader, and trusting relationships with colleagues.

Resources may be placed at the level of the organisation (e.g. salary, career opportunities, job security), at the level of interpersonal and social relations (e.g. supervisor and co-worker support, team climate), at the level of the organisation of work (e.g. role clarity, participation in decision making), and at the level of the task (e.g. performance feedback, skill variety, task significance, task identity, autonomy). It either plays a fundamental motivational role (by developing employee growth, learning and development) or an extrinsic motivational role (by being instrumental in achieving work goals) (Schaufeli & Bakker, 2004).

An assumption of the JD-R model is that work characteristics may elicit two psychologically different processes, namely an *energetic* process of wearing out in which high job demands exhaust the employee's energy, as well as a *motivational* process in which lacking resources preclude dealing effectively with job demands and foster mental withdrawal (Demerouti et al., 2001). When the external environment lacks resources, individuals find themselves unable to reduce the potentially negative influence of high job demands, and cannot achieve their work goals.

The Conservation of Resources (COR) theory (Hobfoll, 1998, 2001) is a relevant theory for understanding the effects of job resources (or the lack thereof) on employees. The COR theory's central tenet is that people strive to obtain, retain and protect what they value. Resources are those personal energies and characteristics, objects and conditions that are valued by individuals or that serve as means for the attainment of other objects, personal characteristics, conditions or energies. Examples of resources include social support, job enhancement opportunities, degree of participation in decision making, being psychologically well or having an optimistic personality, level of autonomy, and established behaviour outcome contingencies (Hobfoll, 1989; Lee & Ashforth, 1996). The COR theory argues that personal resources affect each other and exist as a resource pool, and that an expansion of one is often associated with the other one being augmented (Hobfoll, 1999).

When the external environment lacks resources, individuals cannot reduce the potentially negative influence of high job demands (e.g. overload, role ambiguity, and role conflict) and they cannot achieve their work goals. Additionally, they cannot develop themselves further in their job and organisation. The COR theory predicts that, in such a situation, employees will experience a loss of resources or failure to gain an investment (Hobfoll, 1989; Hobfoll & Freedy, 1993). Moreover, in order to reduce this discomfort or job stress, employees will

attempt to minimise losses. With the intention of achieving equity without further negative consequences for themselves, they will most probably reduce their discretionary inputs.

The effects of job demands and job resources, according to Jackson and Rothmann (2005), are illustrated in Figure 1.

		Low	<b>Job Demands</b>	High
High		Easy Job		Challenging Job
<b>Job Resources</b>				
Low		Boring Job		Stressful Job

*Figure 1.* The effects of job demands and job resources

Figure 1 shows that certain occupations that are characterised by high demands and low resources are stressful, whereas occupations with high demands and resources tend to be challenging.

### **Job demands and resources in different organisations**

Occupational stress research in South Africa shows that different organisations do experience different types of job demands and job resources (Rothmann, 2005). The environment in which employees in different occupations/organisations function differ. Therefore, it could be expected that the job demands and job resources for staff members of universities of technology, academics in higher education institutions, employees in the insurance industry, engineers and correctional officers will differ.

Educators in South African schools faced a dramatic increase in workload in terms of learner numbers over the past two years (Naidu, 2005). According to Jackson and Rothmann (2005), overload, a lack of growth opportunities and low control are major predictors of exhaustion of educators. Doyle and Hind (1998) found that educators do work long hours, but that 40% still find their work enjoyable, motivating and rewarding. These factors effect the whole education system in South Africa, including staff members at universities of technology and higher education institutions.

Educators at higher education institutions face high demands. In 2005, R10,7 billion was spend on higher education in South Africa, which represents 13,4% of the total education budget (Rothmann, 2005). Higher education institutions face huge demands, especially because of mergers between institutions. These institutions do not only face increasing student numbers, but also demands for higher quality human resources. Resources allocated to higher education institutions have decreased due to the competing demands of the state (Koorts, 2000). Institutions need to identify what is relevant to the market and accordingly deliver the programmes that can meet these needs. A premium is also placed on the professional identity of the university teacher as a researcher, capable of attracting external funds within an increasingly competitive research culture (Nixon, Marks, Rowland, & Walker, 2001). Fisher (1994) suggested that such a plethora of roles might easily result in role overload, a particular salient stressor for the modern academic.

The insurance industry seems to be experiencing rapid changes. It has expanded dramatically over the last few years because of fast economic growth, urbanisation and increased education, which has led to high competitiveness and rivalries between companies and employees (Chan, 2002). Currently, this field of work is experiencing intense business pressures. Executives are under pressure to expand into new markets, to boost margins and to grow market share. It requires more emphasis on cross-selling to customers and on being able to provide superior service at reduced costs while directing customers to more profitable products. It also requires expanding and supporting the agent/sales force with minimal impact on operations. Lai, Chan, Ko, and Boey (2000) found that insurance staff experience high job insecurity, a lack of variety and control, high workload and poor interpersonal relations (Lindstrom, Leino, Seitsamo, & Tordtila, 1997). In a South African study, Coetzer (2004) found that employees in the insurance industry experience high levels of job insecurity.

Compared to the past, engineers in South Africa currently have to invest more in their jobs in terms of time, effort, skill, and flexibility, whereas they receive less in terms of career opportunities, lifetime employment and job security. Today's engineers have less time, more work, and a growing need for information (Lingard, 2003). Furthermore, engineers need to be equipped with ways to build and capitalise on their strengths to maintain excellent performance.

Correctional officers perform jobs which are basically client-centred in their orientation. Such jobs involve working intensely and intimately with other people, trying to help them or to perform services to them (Finn, 1998). As the prison population continues to increase, the conditions within correctional facilities will remain stressful for inmates (Hassine, 1996; Toch, 1992) and staff (Anson & Bloom, 1988; Finn, 1998) alike. Although inmates have numerous programs available to help them cope with the stress of their living environment (e.g., stress management programmes), correctional officers have limited resources designed to help them cope with the stress of the prison environment. To further compound the problem, correctional environments are typically considered “tough” and “dangerous” places of employment (Maghan & McLeish-Blackwell, 1991). Therefore, correctional officers often experience high demands (Flanagan, Johnson, & Wesley, 1996), including role conflict because of custodial demands (Anson, Johnson, & Anson, 1997). In addition, Rothmann (2005) showed that correctional services experience a lack of organisational support and a lack of control.

### **Aims of this study**

The aims of this study were to investigate the construct validity, construct equivalence and reliability of a measuring instrument of job demands and resources, and to assess the differences between the job demands and resources in different occupations and organisations in South Africa.

## **METHOD**

### **Research design**

A cross-sectional survey design was used (Kerlinger & Lee, 2000).

## Participants

A stratified, random sample ( $N = 2717$ ) of employees in different working groups and environments was taken. The participants consisted of employees in the insurance industry, the engineering industry, and in correctional services, as well as staff members at a university of technology, and academics within higher education institutions (see Table 1).

Table 1  
*Characteristics of the Participants*

Item	Category	Frequency	Percentage
Gender	Male	1581	58,2
	Female	1100	40,5
Language	Afrikaans	1293	47,6
	English	689	25,4
	Sepedi	114	4,2
	Sesotho	128	4,7
	Setswana	103	3,8
	siSwati	7	0,3
	Tshivenda	16	0,6
	isiZulu	111	4,1
	isiNdebele	21	0,8
	isiXhosa	205	7,5
	Xitsonga	13	0,5
	Other	3	0,1
Education	Highest Grade/Standard	68	2,5
	3-year Degree	876	32,2
	4-year Degree/Honours	567	20,9
	5-7-year Degree	329	12,1
	Master's Degree	379	13,9
	Doctoral Degree	410	15,1
	Other	30	1,1
Age	15-29	437	16
	30-39	1096	40,3
	40-49	628	25
	50-59	337	12,2
	Older than 60	79	2,5

Table 1 shows that the majority of the participants were male (58,2%). The majority of participants were Afrikaans (47,6%) or English (25,4%). Most of the respondents were between the ages of 30 and 39 (40,3%).

### **Measuring instrument**

The *Job Demands-Resources Scale* (JDERS) was developed by Jackson and Rothmann (2005) to measure job demands and job resources. The scale was developed based on a literature review as well as interviews with participating groups in this study. Items were developed and checked for face validity. The JDERS consists of 48 items about pace and amount of work, mental load, emotional load, variety in work, opportunities to learn, independence in work, relationships with colleagues, relationship with immediate supervisor, ambiguities about work, information, communications, participation, contact possibilities, uncertainty about the future, remuneration, and career possibilities. The items were rated on a four-point scale ranging from 1 (*never*) to 4 (*always*). Jackson and Rothmann (2005) found that the dimensions of the JDERS consisted of seven reliable factors, namely organisational support ( $\alpha = 0,88$ ), growth opportunities ( $\alpha = 0,80$ ), overload ( $\alpha = 0,75$ ), job insecurity ( $\alpha = 0,90$ ), relationship with colleagues ( $\alpha = 0,76$ ), control ( $\alpha = 0,71$ ), and rewards ( $\alpha = 0,78$ ). Barkhuizen and Rothmann (in press) found four reliable factors, namely overload ( $\alpha = 0,70$ ), growth and advancement ( $\alpha = 0,85$ ), structure and relationships ( $\alpha = 0,92$ ) and job insecurity ( $\alpha = 0,90$ ).

### **Statistical analysis**

The statistical analysis was carried out with the SPSS programme (SPSS Inc., 2003). Descriptive statistics were used to explore the data. Cronbach alpha coefficients were calculated to assess the reliability of the constructs measured in this study. Exploratory factor analyses were carried out to investigate the construct validity of the measuring instruments. First, a simple principal component analysis was conducted on the constructs that form part of the measurement model, namely job demands and resources. The eigenvalues and scree plot were studied to determine the number of factors. Second, a principal component analysis with a direct oblimin rotation was conducted if factors were related, and a principal

component analysis with a varimax rotation was used if the obtained factors were not related (Tabachnick & Fidell, 2001).

Construct equivalence of the JDRS was also performed. According to Van de Vijver and Leung (1997), construct equivalence can be investigated with several techniques, such as factor analysis, cluster analysis, and multidimensional scaling or other dimensionality-reducing techniques. Factors obtained in each group were compared with the pooled solution (after target rotation). The agreement was evaluated by a factor congruence coefficient, Tucker's phi (Van de Vijver & Leung, 1997). Values above 0,90 were taken to point to essential agreement between cultural groups, while values above 0,95 pointed to very good agreement. A high agreement implied that the factor loadings of the lower and higher levels were equal up to a multiplying constant.

Factor analysis is the most frequently employed technique for studying construct equivalence. In the current study, both exploratory and confirmatory models could have been used. Given that information is available about the composition of the instrument (based on previous studies), the choice of confirmatory factor analysis may seem obvious. However, the current authors used exploratory factor analysis for a pragmatic reason. Little information exists regarding the factor structure of the JDRS. In line with many other studies, these authors found a poor overall fit with their data when using confirmatory models.

Pearson product-moment correlation coefficients were used to specify the relationship between the variables. In terms of statistical significance, it was decided to set the value at a 95% confidence interval level ( $p < 0,05$ ). 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.

Multivariate analysis of variance (MANOVA) was used to assess the significance of differences between job demands and job resources with the different occupational/organisational groups. MANOVA tests whether mean differences among groups in a combination of dependent variables are likely to have occurred by chance (Tabachnick & Fidell, 2001). A new dependent variable that maximises group differences will be created from a set of dependant variables. A one-way analysis on the variance was then performed. Wilks' Lambda was used to test the significance of the effects. Wilks' Lambda is a likelihood

ratio statistic of the data under the assumption of the equal population mean vectors for all the groups against the likelihood under the assumption that the population mean vectors are identical to those of the sample mean vectors for the different groups.

## RESULTS

### *Factorial validity and construct equivalence of the JDRS*

In this study, the first step was to standardise the item scores of the Job Demands-Resources Scale (JD-RS) by occupation/organisation. Secondly, a simple principal component analysis was conducted to assess the number of factors. An analysis of the eigenvalues showed that nine factors could be extracted. However, the scree plot (see Figure 1) showed that five factors could be extracted, which explained 49,81% of the total variance. The eigenvalues of these factors were as follows: Factor 1 = 10,61; Factor 2 = 3,34; Factor 3 = 2,90; Factor 4 = 2,31; and Factor 5 = 1,76.

### Scree Plot

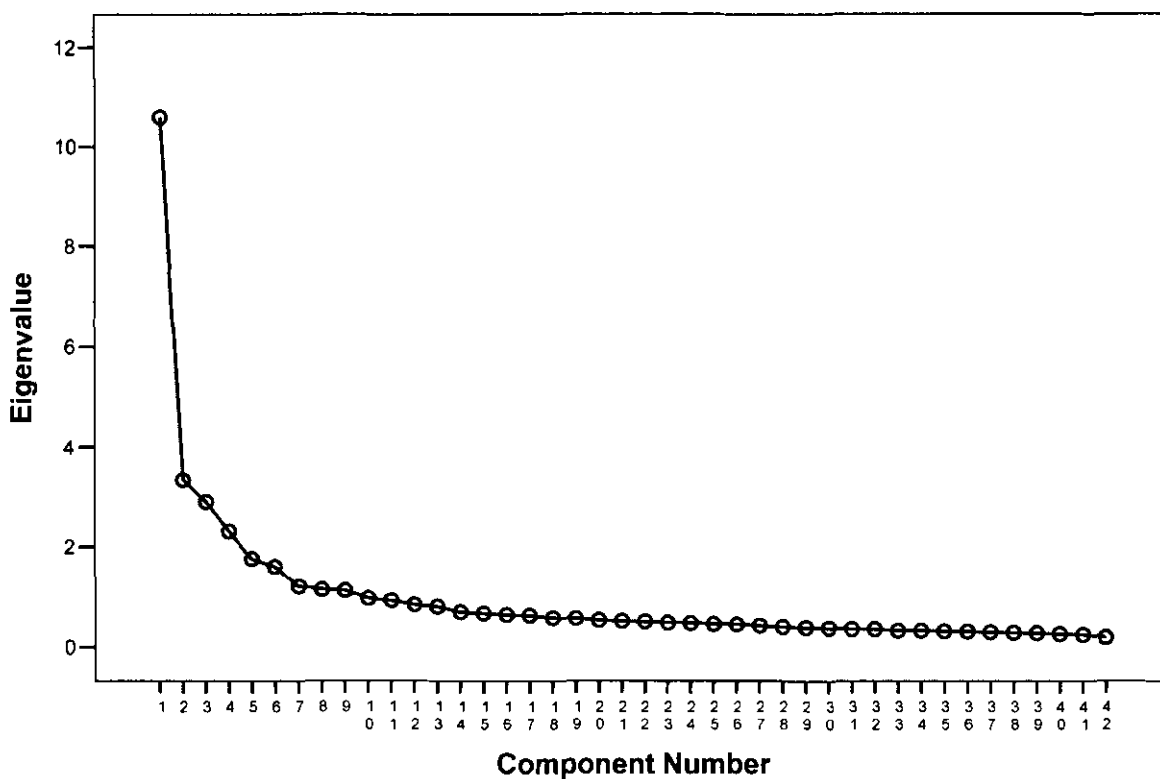


Figure 2. Scree plot of the JDRS

A principal component analysis was conducted on the pooled solution (i.e. all the participants were included in the same analysis). The results of the principal component analysis with a varimax rotation are illustrated in Table 2.

Table 2

*Principal Component Analysis with a Varimax Rotation on the Pooled Solution*

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
EW1-Do you have too much work to do?	-0,07	0,13	-0,09	<b>0,65</b>	0,02
EW2-Do you work under time pressure?	-0,07	0,03	-0,04	<b>0,72</b>	-0,09
EW4-Do you have to be attentive to many things at the same time?	0,01	0,05	-0,02	<b>0,71</b>	-0,06
EW5-Do you have to give continuous attention to your work?	0,14	0,23	-0,15	<b>0,55</b>	0,08
EW6-Do you have to remember many things in your work?	0,11	0,18	-0,14	<b>0,59</b>	0,08
EW7-Are you confronted in your work with things that affect you personally?	-0,15	-0,11	0,11	<b>0,57</b>	0,02
EW8-Do you have contact with difficult people in your work?	-0,01	-0,03	0,06	<b>0,48</b>	0,01
EW9-Does your work put you in emotionally upsetting situations?	-0,20	-0,14	0,05	<b>0,59</b>	0,04
EW12-Do you have enough variety in your work?	0,17	<b>0,56</b>	0,17	0,23	0,00
EW13-Does your job offer you opportunities for personal growth and development?	0,21	<b>0,64</b>	0,32	0,09	-0,01
EW14-Does your work give you the feeling that you can achieve something?	0,23	<b>0,68</b>	0,28	0,06	-0,03
EW15-Does your job offer you the possibility of independent thought and action?	0,29	<b>0,73</b>	0,15	0,10	-0,04
EW16-Do you have freedom in carrying out your work activities?	0,33	<b>0,62</b>	0,06	-0,06	-0,06
EW17-Do you have influence in the planning of your work activities?	0,24	<b>0,65</b>	0,03	0,04	-0,04
EW18-Can you participate in the decision about when a piece of work must be completed?	0,26	<b>0,61</b>	0,06	-0,01	0,03
EW19-Can you count on your colleagues when you come across difficulties in your work?	<b>0,48</b>	0,29	-0,04	-0,06	0,13
EW20-If necessary, can you ask your colleagues for help?	<b>0,46</b>	0,25	-0,06	-0,11	0,12
EW21-Do you get on well with your colleagues?	<b>0,44</b>	0,20	-0,09	-0,08	0,14
EW22-Can you count on your supervisor when you come across difficulties in your work?	<b>0,73</b>	0,13	0,07	-0,04	-0,00
EW23-Do you get on well with your supervisor?	<b>0,75</b>	0,09	0,05	-0,05	-0,00
EW24-In your work, do you feel appreciated by your supervisor?	<b>0,78</b>	0,11	0,19	0,00	-0,04
EW25-Do you know exactly what other people expect of you in your work?	<b>0,55</b>	0,24	-0,00	-0,02	-0,02
EW26-Do you know exactly for what you are responsible?	<b>0,48</b>	0,35	-0,06	-0,06	0,03
EW27-Do you know exactly what your direct supervisor thinks of your performance?	<b>0,73</b>	0,07	0,19	0,05	-0,09
EW28-Do you receive sufficient information on the purpose of your work?	<b>0,68</b>	0,23	0,17	0,00	-0,08
EW29-Do you receive sufficient information on the results of your work?	<b>0,68</b>	0,20	0,21	0,02	-0,06
EW30-Does your direct supervisor inform you about important issues within your department/faculty/university?	<b>0,74</b>	0,07	0,25	0,04	-0,05
EW31-Are you kept adequately up-to-date about important issues within your organisation?	<b>0,55</b>	0,32	0,21	-0,01	-0,04
EW32-Is the decision-making process of your organisation clear to you?	<b>0,46</b>	0,35	0,26	-0,03	-0,03

Table 2

*Principal Component Analysis with a Varimax Rotation on the Pooled Solution (continued)*

EW33-Is it clear to you whom you should address within the organisation for specific problems?	<b>0,51</b>	0,35	0,06	-0,09	0,04
EW34-Can you discuss work problems with your direct supervisor?	<b>0,75</b>	0,18	0,07	-0,04	-0,04
EW35-Can you participate in decisions about the nature of your work?	<b>0,54</b>	0,48	0,11	-0,02	-0,03
EW36-Do you have a direct influence on your organisation's decisions?	<b>0,30</b>	0,44	0,25	0,09	-0,04
EW40-Do you need to be more secure that you will still be working in one year's time?	-0,02	-0,03	-0,03	0,04	<b>0,88</b>
EW41-Do you need to be more secure that you will keep your current job in the next year?	-0,01	-0,05	-0,04	0,04	<b>0,92</b>
EW42-Do you need to be more secure that next year you will keep the same function level as currently?	-0,02	-0,03	-0,02	0,04	<b>0,84</b>
EW43-Do you think that your university pays good salaries?	0,14	0,12	<b>0,78</b>	-0,00	0,02
EW44-Can you live comfortably on your pay?	0,09	0,10	<b>0,79</b>	0,02	-0,03
EW45-Do you think you are paid enough for the work that you do?	0,08	0,03	<b>0,80</b>	-0,10	-0,02
EW46-Does your job offer you the possibility to progress financially?	0,13	0,24	<b>0,75</b>	-0,01	-0,03
EW47-Does your university give you opportunities to follow training courses?	0,24	0,32	<b>0,38</b>	-0,06	-0,02
EW48-Does your job give you the opportunity to be promoted?	0,13	0,30	<b>0,52</b>	-0,02	-0,04

Table 2 shows that 45 of the 48 items loaded on the five factors. Factor 1 was labelled *Growth Opportunities*. This factor refers to having enough variety, opportunities to learn and independence in the job. Factor 2 was labelled *Organisational Support*. This factor refers to the relationship with supervisors and colleagues, flow of information, communication, role clarity and participation in decision-making. Factor 3 was labelled *Advancement*. This factor includes items relating to remuneration, career possibilities and training opportunities. Factor 4 was labelled *Overload* and includes items relating to pace and amount of work, mental load and emotional load. Factor 5 was labelled *Job Insecurity*. This factor refers to uncertainty about the future.

In Table 3, the rotated component matrix of each occupation/organisation was compared with the pooled solution to assess whether they are equivalent.

Table 3

*Principal Component Analysis with a Varimax Rotation on the Individual Groups*

	Group 1: Insurance					Group 2: Engineers					Group 3: Correctional Officers				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
EW1-Do you have too much work to do?	0,02	-0,10	-0,14	<b>0,65</b>	0,05	0,12	0,10	<b>0,63</b>	0,03	-0,04	-0,03	0,20	-0,03	<b>0,63</b>	-0,00
EW2-Do you work under time pressure?	-0,16	-0,05	-0,01	<b>0,71</b>	-0,04	0,07	0,12	<b>0,72</b>	0,03	-0,03	-0,05	0,01	0,02	<b>0,73</b>	-0,09
EW4-Do you have to be attentive to many things at the same time?	0,02	-0,03	0,17	<b>0,71</b>	-0,12	0,09	0,11	<b>0,69</b>	0,12	0,00	-0,01	0,04	-0,03	<b>0,70</b>	-0,08
EW5-Do you have to give continuous attention to your work?	0,11	0,21	-0,14	<b>0,66</b>	0,06	0,24	0,18	<b>0,57</b>	0,04	0,05	0,12	0,33	-0,12	<b>0,48</b>	0,09
EW6-Do you have to remember many things in your work?	-0,00	0,15	-0,03	<b>0,69</b>	0,10	0,14	0,08	<b>0,66</b>	-0,04	0,01	0,05	0,24	-0,07	<b>0,56</b>	0,11
EW7-Are you confronted in your work with things that affect you personally?	-0,01	-0,23	0,06	<b>0,52</b>	0,00	-0,03	-0,09	<b>0,45</b>	0,06	0,02	-0,09	-0,20	0,14	<b>0,59</b>	-0,03
EW8-Do you have contact with difficult people in your work?	0,07	-0,15	0,37	<b>0,28</b>	-0,05	0,13	-0,13	<b>0,56</b>	-0,13	-0,03	0,01	-0,04	-0,07	<b>0,50</b>	0,13
EW9-Does your work put you in emotionally upsetting situations?	0,02	-0,32	0,04	<b>0,50</b>	0,08	-0,19	-0,17	<b>0,53</b>	-0,03	0,09	-0,12	-0,22	0,03	<b>0,64</b>	0,03
EW12-Do you have enough variety in your work?	<b>0,51</b>	0,05	0,21	0,30	-0,03	<b>0,43</b>	0,18	0,32	0,25	-0,14	0,21	<b>0,46</b>	0,23	0,22	0,11
EW13-Does your job offer you opportunities for personal growth and development?	<b>0,57</b>	0,11	0,45	0,08	0,01	<b>0,51</b>	0,19	0,37	0,36	-0,10	0,19	<b>0,59</b>	0,35	0,01	0,03
EW14-Does your work give you the feeling that you can achieve something?	<b>0,56</b>	0,15	0,48	0,10	-0,03	<b>0,55</b>	0,12	0,31	0,33	-0,11	0,18	<b>0,68</b>	0,34	-0,08	0,06
EW15-Does your job offer you the possibility of independent thought and action?	<b>0,55</b>	0,18	0,39	0,13	-0,02	<b>0,70</b>	0,02	0,23	0,17	-0,10	0,24	<b>0,71</b>	0,21	0,07	-0,05
EW16-Do you have freedom in carrying out your work activities?	<b>0,59</b>	0,26	0,15	-0,03	-0,05	<b>0,68</b>	0,12	0,05	0,17	-0,12	0,34	<b>0,61</b>	0,10	-0,02	-0,05
EW17-Do you have influence in the planning of your work activities?	<b>0,69</b>	0,11	0,08	0,09	-0,07	<b>0,73</b>	0,08	0,02	0,06	-0,04	0,18	<b>0,62</b>	0,08	0,12	-0,02
EW18-Can you participate in the decision about when a piece of work must be completed?	<b>0,61</b>	0,16	0,06	-0,02	0,02	<b>0,60</b>	0,10	0,08	0,05	-0,05	0,30	<b>0,61</b>	0,12	0,06	0,04
EW19-Can you count on your colleagues when you come across difficulties in your work?	0,07	<b>0,62</b>	0,02	-0,04	-0,02	0,13	<b>0,66</b>	0,10	0,11	0,03	<b>0,33</b>	0,56	0,03	0,02	0,16
EW20-If necessary, can you ask your colleagues for help?	-0,04	<b>0,63</b>	0,01	-0,06	-0,07	0,12	<b>0,65</b>	0,01	0,09	0,02	<b>0,34</b>	0,54	-0,03	-0,04	0,17
EW21-Do you get on well with your colleagues?	0,03	<b>0,53</b>	-0,04	-0,00	0,01	0,02	<b>0,58</b>	0,11	0,09	0,01	<b>0,34</b>	0,45	-0,05	-0,07	0,18
EW22-Can you count on your supervisor when you come across difficulties in your work?	0,29	<b>0,58</b>	0,30	-0,18	-0,07	0,07	<b>0,81</b>	0,05	0,14	-0,06	<b>0,64</b>	0,38	-0,01	-0,05	0,03
EW23-Do you get on well with your supervisor?	0,27	<b>0,58</b>	0,22	-0,18	0,03	0,22	<b>0,77</b>	-0,05	0,02	-0,10	<b>0,66</b>	0,31	-0,03	-0,03	0,03
EW24-In your work, do you feel appreciated by your supervisor?	0,34	<b>0,60</b>	0,36	-0,13	-0,05	0,38	<b>0,66</b>	-0,02	0,10	-0,10	<b>0,72</b>	0,27	0,06	-0,02	0,03

Table 3

*Principal Component Analysis with a Varimax Rotation on the Individual Groups (continued)*

	Group 1: Insurance					Group 2: Engineers					Group 3: Correctional Officers				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
EW25-Do you know exactly what other people expect of you in your work?	0,24	<b>0,64</b>	-0,07	0,08	0,01	<b>0,59</b>	0,08	-0,02	-0,07	-0,03	<b>0,45</b>	0,37	0,06	-0,01	0,10
EW26-Do you know exactly for what you are responsible?	0,38	<b>0,48</b>	-0,18	0,01	0,06	<b>0,66</b>	0,21	0,00	-0,03	-0,08	<b>0,40</b>	0,40	-0,01	0,02	0,15
EW27-Do you know exactly what your direct supervisor thinks of your performance?	0,30	<b>0,62</b>	0,24	0,03	-0,08	<b>0,45</b>	0,38	-0,04	0,09	-0,10	<b>0,74</b>	0,09	0,12	0,03	0,03
EW28-Do you receive sufficient information on the purpose of your work?	0,40	<b>0,58</b>	0,22	0,05	-0,09	<b>0,55</b>	0,44	-0,05	0,01	-0,13	<b>0,71</b>	0,19	0,20	-0,00	-0,00
EW29-Do you receive sufficient information on the results of your work?	0,34	<b>0,61</b>	0,17	0,02	-0,07	<b>0,58</b>	0,34	-0,01	0,10	-0,12	<b>0,75</b>	0,16	0,26	0,02	0,02
EW30	0,29	<b>0,64</b>	0,31	-0,04	-0,04	<b>0,44</b>	0,49	-0,03	0,16	-0,04	<b>0,76</b>	0,08	0,23	0,03	-0,02
EW31-Are you kept adequately up-to-date about important issues within your organisation?	0,51	<b>0,42</b>	0,16	-0,05	-0,10	<b>0,55</b>	0,25	0,12	0,26	-0,00	<b>0,58</b>	0,26	0,25	-0,06	0,08
EW32-Is the decision-making process of your organisation clear to you?	0,59	<b>0,34</b>	0,07	-0,06	-0,02	<b>0,67</b>	0,12	0,09	0,27	-0,03	<b>0,42</b>	0,24	0,44	-0,07	0,12
EW33-Is it clear to you whom you should address within the organisation for specific problems?	0,54	<b>0,41</b>	-0,06	-0,08	0,00	<b>0,54</b>	0,35	-0,02	0,15	0,04	<b>0,44</b>	0,29	0,24	-0,13	0,11
EW34-Can you discuss work problems with your direct supervisor?	0,42	<b>0,55</b>	0,17	-0,12	-0,06	<b>0,34</b>	0,72	-0,04	0,08	-0,06	<b>0,72</b>	0,29	0,04	-0,06	0,03
EW35-Can you participate in decisions about the nature of your work?	0,69	<b>0,31</b>	0,10	-0,08	-0,04	<b>0,66</b>	0,29	0,09	0,12	-0,09	<b>0,53</b>	0,41	0,20	0,01	0,05
EW36-Do you have a direct influence on your organisation's decisions?	0,68	<b>0,06</b>	0,08	-0,01	-0,06	<b>0,68</b>	0,01	0,16	0,21	0,01	<b>0,27</b>	0,26	0,42	0,07	0,06
EW40-Do you need to be more secure that you will still be working in one year's time?	-0,08	-0,11	-0,09	0,04	<b>0,90</b>	-0,11	-0,04	0,02	-0,06	<b>0,90</b>	0,05	0,12	0,04	0,03	<b>0,83</b>
EW41-Do you need to be more secure that you will keep your current job in the next year?	-0,08	-0,06	-0,10	0,01	<b>0,93</b>	-0,18	-0,05	-0,02	-0,05	<b>0,93</b>	0,09	0,08	0,01	0,06	<b>0,85</b>
EW42-Do you need to be more secure that next year you will keep the same function level as currently?	-0,04	-0,02	-0,12	0,05	<b>0,85</b>	-0,14	-0,08	0,03	-0,04	<b>0,88</b>	0,06	0,07	0,06	0,03	<b>0,73</b>
EW43-Do you think that organisation pays good salaries?	0,19	0,15	<b>0,82</b>	-1,01	-0,12	0,22	0,11	0,02	<b>0,74</b>	0,02	0,07	0,05	<b>0,78</b>	0,01	0,05
EW44-Can you live comfortably on your pay?	0,13	0,12	<b>0,79</b>	-1,04	-0,05	0,16	0,04	0,01	<b>0,75</b>	-0,16	0,11	0,04	<b>0,80</b>	0,03	-0,02
EW45-Do you think you are paid enough for the work that you do?	0,09	0,12	<b>0,82</b>	-0,08	-0,06	0,02	0,15	-0,10	<b>0,76</b>	0,07	0,03	-0,02	<b>0,80</b>	-0,07	0,00
EW46-Does your job offer you the possibility to progress financially?	0,24	0,14	<b>0,73</b>	-0,03	-0,07	0,38	0,18	0,06	<b>0,69</b>	-0,11	0,12	0,10	<b>0,81</b>	-0,03	0,02
EW47-Does your organisation give you opportunities to follow training courses?	0,59	0,08	<b>0,22</b>	-0,10	-0,01	0,29	0,30	0,07	<b>0,26</b>	0,03	0,19	0,21	<b>0,57</b>	-0,05	-0,01
EW48-Does your job give you the opportunity to be promoted?	0,36	0,12	<b>0,47</b>	-0,06	-0,18	0,21	0,34	0,13	<b>0,43</b>	-0,03	0,13	0,16	<b>0,65</b>	-0,02	-0,00

Table 3

*Principal Component Analysis with a Varimax Rotation on the Individual Groups (continued)*

	Group 4: University of Technology					Group 5: Educators (Universities)				
EW1-Do you have too much work to do?	-0,16	0,04	<b>0,71</b>	-0,12	-0,02	-0,10	0,07	<b>0,69</b>	-0,03	-0,00
EW2-Do you work under time pressure?	-0,13	0,04	<b>0,76</b>	-0,05	-0,09	-0,01	-0,00	<b>0,73</b>	-0,06	-0,01
EW4-Do you have to be attentive to many things at the same time?	-0,02	0,10	<b>0,62</b>	-0,22	0,06	0,00	0,05	<b>0,69</b>	-0,06	-0,07
EW5-Do you have to give continuous attention to your work?	0,03	0,34	<b>0,54</b>	-0,20	0,08	0,11	0,06	<b>0,60</b>	-0,07	0,04
EW6-Do you have to remember many things in your work?	0,06	0,43	<b>0,42</b>	-0,31	0,04	0,16	0,09	<b>0,65</b>	-0,11	0,05
EW7-Are you confronted in your work with things that affect you personally?	-0,16	-0,12	<b>0,52</b>	0,04	0,09	-0,22	-0,10	<b>0,61</b>	0,12	0,10
EW8-Do you have contact with difficult people in your work?	0,10	-0,12	<b>0,55</b>	-0,05	0,07	-0,15	0,08	<b>0,35</b>	0,02	0,04
EW9-Does your work put you in emotionally upsetting situations?	-0,16	-0,24	<b>0,61</b>	0,14	0,15	-0,25	-0,07	<b>0,51</b>	-0,05	-0,06
EW12-Do you have enough variety in your work?	0,19	<b>0,50</b>	0,28	0,26	-0,06	0,18	<b>0,63</b>	0,21	0,14	-0,00
EW13-Does your job offer you opportunities for personal growth and development?	0,31	<b>0,50</b>	0,17	0,40	-0,01	0,14	<b>0,77</b>	0,06	0,17	-0,06
EW14-Does your work give you the feeling that you can achieve something?	0,46	<b>0,51</b>	0,16	0,23	-0,10	0,12	<b>0,81</b>	0,09	0,13	-0,09
EW15-Does your job offer you the possibility of independent thought and action?	0,27	<b>0,68</b>	0,23	0,27	-0,05	0,15	<b>0,80</b>	0,06	-0,03	-0,10
EW16-Do you have freedom in carrying out your work activities?	0,41	<b>0,54</b>	-0,04	0,08	-0,13	0,26	<b>0,64</b>	-0,10	-0,01	-0,05
EW17-Do you have influence in the planning of your work activities?	0,37	<b>0,57</b>	0,07	0,14	-0,16	0,26	<b>0,55</b>	0,02	-0,02	-0,02
EW18-Can you participate in the decision about when a piece of work must be completed?	0,32	<b>0,54</b>	0,01	0,15	-0,06	0,20	<b>0,52</b>	-0,01	0,16	0,02
EW19-Can you count on your colleagues when you come across difficulties in your work?	<b>0,23</b>	0,52	-0,31	-0,03	0,14	<b>0,46</b>	0,25	-0,18	-0,11	0,14
EW20-If necessary, can you ask your colleagues for help?	<b>0,17</b>	0,54	-0,28	-0,01	0,14	<b>0,44</b>	0,19	-0,26	-0,05	0,13
EW21-Do you get on well with your colleagues?	<b>0,16</b>	0,52	-0,28	-0,10	0,15	<b>0,48</b>	0,11	-0,18	-0,14	0,15
EW22-Can you count on your supervisor when you come across difficulties in your work?	<b>0,72</b>	0,26	-0,12	-0,14	-0,04	<b>0,67</b>	0,14	-0,10	-0,00	0,11
EW23-Do you get on well with your supervisor?	<b>0,66</b>	0,24	-0,20	-0,15	0,00	<b>0,73</b>	0,13	-0,10	0,02	0,04
EW24-In your work, do you feel appreciated by your supervisor?	<b>0,79</b>	0,13	-0,06	0,11	-0,01	<b>0,76</b>	0,10	-0,03	0,17	-0,03
EW25-Do you know exactly what other people expect of you in your work?	<b>0,58</b>	0,29	-0,17	0,07	-0,12	<b>0,64</b>	0,01	-0,04	0,01	-0,12

Table 3  
Principal Component Analysis with Varimax on the Individual Groups (continued)

	Group 4: University of Technology					Group 5: Educators (Universities)				
EW26-Do you know exactly for what you are responsible?	<b>0.51</b>	0.34	-0.19	-0.06	-0.09	<b>0.50</b>	0.17	-0.13	0.01	-0.02
EW27-Do you know exactly what your direct supervisor thinks of your performance?	<b>0.84</b>	0.00	-0.03	0.15	-0.03	<b>0.76</b>	0.07	0.03	0.19	-0.12
EW28-Do you receive sufficient information on the purpose of your work?	<b>0.72</b>	0.21	-0.12	0.17	-0.01	<b>0.72</b>	0.19	0.01	0.10	-0.14
EW29-Do you receive sufficient information on the results of your work?	<b>0.73</b>	0.14	-0.04	0.17	-0.01	<b>0.70</b>	0.12	0.04	0.20	-0.07
EW30	<b>0.82</b>	0.08	-0.02	0.14	0.02	<b>0.73</b>	-0.01	0.04	0.22	-0.07
EW31-Are you kept adequately up-to-date about important issues within your organisation?	<b>0.68</b>	0.21	-0.04	0.12	-0.12	<b>0.57</b>	0.18	0.01	0.21	-0.07
EW32-Is the decision-making process of your organisation clear to you?	<b>0.65</b>	0.16	-0.04	0.11	-0.11	<b>0.56</b>	0.15	0.03	0.24	-0.16
EW33-Is it clear to you whom you should address within the organisation for specific problems?	<b>0.52</b>	0.41	-0.05	-0.11	0.03	<b>0.63</b>	0.15	-0.03	0.00	-0.02
EW34-Can you discuss work problems with your direct supervisor?	<b>0.81</b>	0.15	-0.08	-0.11	-0.02	<b>0.73</b>	0.16	-0.07	0.02	-0.01
EW35-Can you participate in decisions about the nature of your work?	<b>0.71</b>	0.39	-0.01	0.10	0.06	<b>0.65</b>	0.35	-0.01	0.05	-0.13
EW36-Do you have a direct influence on your organisation's decisions?	<b>0.59</b>	0.20	0.18	0.28	0.00	<b>0.40</b>	0.37	0.17	0.12	-0.15
EW40-Do you need to be more secure that you will still be working in one year's time?	-0.10	0.03	0.03	-0.11	<b>0.89</b>	-0.07	-0.08	0.05	0.03	<b>0.88</b>
EW41-Do you need to be more secure that you will keep your current job in the next year?	-0.09	-0.04	0.10	-0.08	<b>0.92</b>	-0.08	-0.11	0.03	0.04	<b>0.92</b>
EW42-Do you need to be more secure that next year you will keep the same function level as currently?	-0.06	0.02	0.11	-0.02	<b>0.87</b>	-0.09	-0.12	0.02	-0.01	<b>0.86</b>
EW43-Do you think that your organisation pays good salaries?	-0.01	0.22	-0.14	<b>0.73</b>	-0.02	0.21	0.03	-0.05	<b>0.76</b>	0.10
EW44-Can you live comfortably on your pay?	-0.01	0.04	-0.11	<b>0.77</b>	-0.16	0.06	0.11	-0.02	<b>0.78</b>	0.05
EW45-Do you think you are paid enough for the work that you do?	-0.03	-0.02	-0.22	<b>0.72</b>	-0.26	0.14	0.10	-0.17	<b>0.77</b>	0.01
EW46-Does your job offer you the possibility to progress financially?	0.18	0.04	-0.04	<b>0.73</b>	0.02	0.12	0.25	0.01	<b>0.71</b>	-0.05
EW47-Does your organisation give you opportunities to follow training courses?	0.32	0.28	-0.04	<b>0.34</b>	0.05	0.26	0.25	-0.18	<b>0.25</b>	-0.14
EW48-Does your job give you the opportunity to be promoted?	0.27	0.03	0.02	<b>0.46</b>	0.09	0.04	0.48	-0.05	<b>0.37</b>	-0.08

The Tucker's phi coefficients for the JDRS in different organisations/occupations are reported in Table 4.

Table 4

*Tucker's Phi Coefficients of the Factors of the JDRS*

	1	2	3	4	5
Insurance Industry	0,94	0,96	0,94	0,97	0,97
Engineering Industry	0,94	0,89	0,97	0,95	0,97
Correctional Officers	0,99	0,97	0,98	0,99	0,98
University of Technology	0,96	0,94	0,96	0,97	0,96
Academics (Higher Education Institutions)	0,99	0,96	0,98	0,98	0,98

Table 3 and Table 4 show that the factor structure of the JDRS was equivalent in different organisations/occupations. The Tucker's phi coefficients compared favourably with the guideline of 0,90. The only exception was the Tucker's phi of the second factor in the Engineer group. The coefficient was slightly lower than the cut-off point of 0,90. Table 3 shows that there are two reasons for this slightly lower Tucker's phi value on organisational support. First, in the correctional officer sample as well as in university of technology sample, three items related to support of colleagues had relatively strong cross-loadings on another factor, namely growth opportunities. Second, one item ("Do you have a direct influence on your organisation's decisions"), which is supposed to form part of organisational support, loaded on another factor (growth opportunities) in the correctional officer sample as well as the sample of employees in the insurance industry.

*Descriptive statistics, alpha coefficients and correlations*

The descriptive statistics, alpha coefficients and correlations of the JDRS are reported in Table 5.

Table 5

*Descriptive Statistics, Alpha Coefficients and Pearson Correlations of the JDRS*

	Mean	SD	$\alpha$	1	2	3	4
1. Growth Opportunities	19,50	4,75	0,86	-	-	-	-
2. Organisational Support	51,85	10,71	0,92	0,65 <sup>*++</sup>	-	-	-
3. Advancement	12,66	4,26	0,83	0,46 <sup>*+</sup>	0,42 <sup>*+</sup>	-	-
4. Overload	22,18	4,18	0,76	0,16 <sup>*</sup>	-0,04	-0,01	-
5. Job Insecurity	7,63	3,02	0,89	-0,14 <sup>*</sup>	-0,11 <sup>*</sup>	-0,16 <sup>*</sup>	-0,01

\* Statistically significant:  $p > 0,01$

+ Practically significant (medium effect):  $r > 0,30$

++ Practically significant (large effect):  $r > 0,50$

Table 5 shows that highly acceptable alpha coefficients, ranging from 0,76 to 0,92, were obtained (Nunnally & Bernstein, 1994). Thus, the scale shows acceptable internal consistence. Table 5 shows that growth opportunities are practically significantly related to organisational support (large effect), and advancement (medium effect). Organisational support is practically significantly related to advancement (medium effect).

Subsequently, a principal component analysis was carried out on the five first-order factors. Two factors, with eigenvalues of 2,08 and 1,03 respectively, were extracted. These two factors explained 62,20% of the total variance. The first factor was labelled *Job Demands*, and included overload (loading = 0,98). The second factor was labelled *Job Resources*, and included growth opportunities (0,84), organisational support (0,84), job insecurity (-0,32), and advancement (0,75).

*Differences between groups*

Next, multivariate analysis of variance (MANOVA) was used to determine the significance of differences between job demands and job resources in different occupational/organisational groups (see Table 6). In MANOVA, several dependent variables (in this case overload, organisational support, growth opportunities, job insecurity and advancement) are considered together in the same analysis.

Table 6

*MANOVA with Occupation/Organisation as Independent Variable and Job Demands and Resources as Dependent Variables*

Variable	Value	<i>F</i>	<i>df</i>	Error <i>df</i>	<i>p</i>	$\eta^2$
Occupation/Organisation	0,70	52,01	4	8982,37	0,00*	0,09

\* Statistically significantly:  $p < 0,01$

The means and standard deviations of the job demands and resources for different biographical groups are reported in Table 7.

Table 7

*Means and Standard Deviations of Job Demands and Resources*

Type	Group	Mean	<i>SD</i>	<i>n</i>
Growth opportunities	Insurance Industry	18,66	4,17	613
	Engineering Industry	22,30	3,97	369
	Correctional Services	18,44	5,00	892
	University of Technology	19,21	4,81	372
	Academics (Higher Education Institutions)	20,62	4,39	471
Organisational support	Insurance Industry	53,21	9,42	613
	Engineering Industry	55,80	9,08	369
	Correctional Services	49,23	11,32	892
	University of Technology	50,45	11,53	372
	Academics (Higher Education Institutions)	53,03	10,18	471
Advancement	Insurance Industry	12,46	4,05	613
	Engineering Industry	15,68	3,86	369
	Correctional Services	12,12	4,67	892
	University of Technology	12,34	3,61	372
	Academics (Higher Education Institutions)	11,82	3,45	471
Overload	Insurance Industry	22,74	3,76	613
	Engineering Industry	23,78	3,53	369
	Correctional Services	21,68	4,52	892
	University of Technology	22,69	3,83	372
	Academics (Higher Education Institutions)	23,32	4,18	471
Job insecurity	Insurance Industry	7,50	2,82	613
	Engineering Industry	5,27	2,54	369
	Correctional Services	8,85	2,60	892
	University of Technology	8,15	2,92	372
	Academics (Higher Education Institutions)	6,95	3,12	471

Table 6 and 7 shows a statistically significant effects of the occupation/organisation on the combined dependent variable *job demands/resources* ( $F = 52,01$ ;  $p < 0,01$ ; Wilks' Lambda = 0,70;  $\eta^2 = 0,09$ ). This effect was moderate (explaining 9% of the variance in job demands/resources). Occupation/organisation explained 15% of the variance in job insecurity, 8% of the variance in growth opportunities, and 8% of the variance in advancement. Furthermore, occupation/organisation explained 7% of the variance in overload explained and 5% of the variance in organisational support.

Engineers showed statistically significantly higher scores on *overload* than employees in the insurance industry. Correctional officers experienced less overload than the insurance staff as well as the university of technology and academics in higher education institutions. Engineers and academics in higher education institutions experienced the highest overload. Engineers experienced the highest *growth opportunities* of all the occupations/organisations. Academics in higher education institutions also experienced more growth opportunities than the other groups, while correctional officers experienced the least growth opportunities.

Engineers, academics in higher education institutions and employees in the insurance industry reported higher levels of *organisational support* than correctional officers and employees of a university of technology. Engineers obtained higher scores on *advancement* than the other groups. However, academics in higher education institutions reported the least advancement opportunities. Job insecurity was the highest for correctional officers and employees of a university of technology, and the lowest for engineers.

## DISCUSSION

The aims of this study were to investigate the construct validity, construct equivalence and reliability of a measuring instrument of job demands and resources and to assess the differences between the job demands and resources in different occupations and organisations in South Africa. The results showed that the JDRS is valid, reliable and equivalent for different occupations and organisations. Significant differences were found in terms of job demands and job resources in different organisations and occupations.

With regard to the construct (factorial) validity, evidence was found for five dimensions of job demands and resources, namely overload, job insecurity, growth opportunities, advancement and organisational support. *Overload* refers to the amount of work, mental load and emotional load. *Job insecurity* refers to feeling insecure in the current job with regard to the future thereof. *Growth opportunities* refers to having enough variety, opportunities to learn and independence in your work. *Advancement* means moving forward within your work and include remuneration, training and career opportunities. *Organisational support* refers to relationships with your supervisor/manager, the availability of information, communication in the organisation, participation, social support by colleagues, and contact opportunities within the organisation (Jackson & Rothmann, 2005).

A second-order factor analysis, which was conducted using the five observed factors, resulted in a two-factor structure. The first factor represented job demands (overload). The second factor represented job resources (i.e. growth opportunities, organisational support, advancement and job security). These factors correspond with the two factors found by Demerouti et al. (2001) and Schaufeli and Bakker (2004). Therefore, it seems that the factorial structure of job demands and job resources is valid. The results in this study are similar to those reported by Demerouti et al. (2001) who stated that different work characteristics can be grouped into the two categories of job demands and job resources.

Regarding the equivalence of the JDRS, the results showed acceptable Tucker's phi values for the five factors within the different organisations. Therefore, the general framework in the JDR model seems to stay stable across the five different occupations/organisations (Demerouti et al., 2001). The only exception was on organisational support which showed a slightly lower than acceptable equivalence. A possible explanation for the lower equivalence of this factor is that the structure of organisational support for correctional officers and staff members at a university of technology is somewhat different as far as social support is concerned. In these two occupations/organisations social support is regarded as inherent in the job rather than just a form or support from the organisation. Probably social support is perceived as a very important part of the nature of the job. The strong loadings of social support items on growth opportunities in these two sample supports this notion. An item related to having a direct influence on the organisation's decisions (which is supposed to be a form of organisational support), loaded on growth opportunities in the correctional officer sample as well as the sample of employees in the insurance industry.

Engineers showed statistically significantly higher scores on overload than employees in the insurance industry. Correctional officers experienced less overload than the insurance staff as well as the university of technology and academics in higher education institutions. Engineers and academics in higher education institutions experienced the highest overload. Engineers experienced the highest growth opportunities of all the occupations/organisations. The combination of high overload and high growth opportunities probably makes the engineering profession a challenging (rather than just a stressful) one (Jackson & Rothmann, 2005). Academics in higher education institutions also experienced higher growth opportunities than the other groups, while correctional officers experienced the least growth opportunities. The finding that academics in higher education institutions experience overload is in line with the findings of Koorts (2000), Nixon et al. (2001), and Fisher (1994). However, the growth opportunities (e.g., variety, learning opportunities and autonomy) inherent in job in academia, might contribute to perceptions that the job is challenging.

Engineers, academics in higher education institutions and employees in the insurance industry reported higher levels of *organisational support* than correctional officers and employees of a university of technology. The lack of organisational support for correctional officers has also been pointed out by Maghan and McLeish-Blackwell (1991) and Rothmann Rothmann (2005). Engineers obtained higher scores on *advancement* than the other groups. However, academics in higher education institutions reported the least advancement opportunities. Job insecurity was the highest for correctional officers and employees at a university of technology, and the lowest for engineers. The high levels of job insecurity of correctional officers and employees at a university of technology might be related to the transformation towards employment equity that is taking place in South African organisations.

This study had certain limitations. Firstly, the sample sizes of all the occupations/organisations were not equal, which could have influenced the results of the factor analyses. Secondly, only five occupations/organisations were included in this study. It is necessary to include more occupations and organisations in future studies with the JDRS. Thirdly, in this study participants were classified according to occupation and organisation. For instance, although academics in higher education institutions were regarded as an occupation, the participants represented various higher education institutions in South Africa. In future studies it might be useful to analyse the data of all organisations or all occupations separately.

## RECOMMENDATIONS

Various application-oriented suggestions were generated by this study. First, the results supported the factorial validity and invariance of the JDRS for different occupations and organisations. Therefore, the JDRS could be utilised to measure and compare job demands and job resources in different occupations and organisations. Second, this study showed that job demands and job resources in different organisations and occupations were different. Knowledge of these differences could be used to plan interventions to promote the work-related well-being of employees. However, before interventions are implemented, more research is needed regarding the effects of job demands and job resources on employees' energy and identification with their work.

Research is needed regarding the factorial validity and construct equivalence of the JDRS in other organisations and occupations. More research is needed regarding job demands and resources in different occupations and organisations in South Africa, to develop a measure which could be used in a wide variety of contexts. This information can be used not only to plan and structure interventions, but also to inform human resource policies in organisations.

Longitudinal research is needed to investigate the immediate and long-term effects of specific job demands and job resources in each occupation/organisation on employee health and wellness, as well as the outcomes thereof. Cross-sectional designs may not always clearly demonstrate the relationship between the variables (Smyth & Stone, 2003). It also tends to overestimate "pain" and/or emotions and feelings. Ecological Momentary Assessment (EMA) could be used to assess how employees experience job demands and job resources on a momentary basis in the natural environment (Stone & Shiffman, 1994). EMA permits the examination of events in their natural, spontaneous context that provides information that is complimentary to that obtainable from the cross-sectional type of design that was used in this study.

## References

- Anson, R. H., & Bloom, M. E. (1988). Police stress in an occupational context. *Journal of Police and Administration* 16, 229-235.
- Anson, R. H., Johnson, B., & Anson, N. W. (1997). Magnitude and sources of general and occupation specific stress among police and correctional officers. *Journal of Offender Rehabilitation*, 25, 103-113.
- Bakker, A.B., Demerouti, E., & Schaufeli, W.B. (2003). Dual processes at work in a call centre: An application of the job demands-resources model. *European Journal of Work and Organizational Psychology*, 12(4), 393-417.
- Bakker, A. B., Demerouti, E., Taris, T. W., Schaufeli, W. B., & Schreurs, P. J. G. (2003). A multigroup analysis of the Job Demands-Resources Model in four home care organizations. *International Journal of Stress Management*, 10(1), 16-38.
- Barkhuizen, N., & Rothmann, S. (in press). *Work wellness of academic staff in South African higher education institutions*. Manuscript submitted for publication.
- Barling, J. (1999). Changing employment relations: Empirical data, social perspectives and policy options. In D. B. Knight & A. Joseph (Eds.). *Restructuring societies: Insights from the social sciences* (pp. 59-82). Ottawa: Carlton University Press.
- Chan, K. B. (2002). Coping with work stress, work satisfaction and social support: An interpretive study of life insurance agents. *Journal of Social Sciences*, 30, 657-685.
- Coetzer, W. J. (2004). *Burnout and work engagement of employees in an insurance company*. Unpublished doctoral thesis, North-West University, Potchefstroom.
- Cohen, J. (1988). *Statistical power analysis for the behavioural science* (2<sup>nd</sup> ed.). Hillsdale, NJ: Erlbaum.
- De Jonge, J., & Kompier, M. A. J. (1997). A critical examination of the Demand-Control-Support model from a work psychological perspective. *International Journal of Stress Management*, 4, 235-258.
- 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.
- Doyle, C., & Hind, P. (1998). Occupational stress, burnout and job status in female academics. *Gender, Work and Organisations*, 5, 67-82.
- Elsass, P. M., & Veiga, J. F. (1997). Job control and job strain: A test of three models. *Journal of Occupational Health Psychology*, 2, 195-211.

- Finn, P. (1998). Correctional officer stress: A cause for concern and additional help. *Federal Probation* 62, 65-74.
- Fisher, S. (1994). *Stress in academic life: The mental assembly line*. Buckingham, UK: Open University Press.
- Flanagan, T. J., Johnson, W., & Wesley, E. (1996). Job satisfaction among correctional executives: A contemporary portrait of wardens of state prisons for adults. *Prison Journal*, 76(4), 13-15.
- Ganster, D. C., & Fusilier, M. R. (1989). Control in the workplace. In C. L. Cooper & I. T. Robertson (Eds.). *International review of industrial and organisational psychology* (pp. 235-280). Chichester, UK: Wiley.
- Hackman, J. R., & Oldham, G. R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.
- Hassine, V. (1996). *Life without parole*. Los Angeles: Roxbury.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44, 513-524.
- Hobfoll, S. E. (1998). *Stress, culture and community: The psychology and philosophy of stress*. New York: Plenum.
- Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology: An International Review*, 50, 337-370.
- Hobfoll, S. E., & Freedy, J. (1993). Conservation of resources: A general stress theory applied to burnout. In W. B. Schaufeli, C. Maslach, & T. Marek. (Eds.), *Professional burnout: Recent developments in theory and practice* (pp. 115-129). Washington, DC: Taylor & Francis.
- Hockey, G. J. (1997). Compensatory control in the regulation of human performance under stress and high workload: A cognitive-energetical framework. *Biological Psychology*, 45, 73-93.
- Jackson, L. T. B., & Rothmann, S. (2005). Work-related well-being of educators in a district of the North West Province. *Perspectives in Education*, 23, 107-122.
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33, 692-724.
- Karasek, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job design. *Administrative Science Quarterly*, 24, 285-308.
- Karasek, R. A., & Theorell, T. (1990). *Healthy work: Stress, productivity, and the recognition of working life*. New York: Basic Books.

- Kerlinger, F. N., & Lee, H. B. (2000). *Foundations of behavioral research* (4<sup>th</sup> ed.). Orlando, FL: Harcourt College Publishers.
- Koorts, A. S. (2000). Global, social and economic influences on the access policies of South African Higher Education. *Higher Education in Europe*, 25, 381-387.
- Lai, G., Chan, K. B, Ko, Y. C., & Boey, K. W. (2000). Institutional context and stress appraisal: The experience of life insurance agents in Singapore. *Journal of Asian & African Studies*, 35, 209-228.
- Lee, R. T., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81, 123-133.
- Lindstrom, K., Leino, T., Seitsamo, T., & Tordtila, L. (1997). A longitudinal study of work characteristics and health complaints among insurance employees in VTD work. *International Journal of Human Computer Interaction*, 9, 343-368.
- Maghan, J., & McLeish-Blackwell, L. (1991). Black women in correctional employment. In J. B. Morton (Ed.), *Change, challenges, and choices: Women's role in modern corrections* (pp. 82-99). Laurel, Maryland: American Correctional Association.
- Martin, P. (1997). *The sickening mind: Brain, behaviour, immunity and disease*. London: HarperCollins.
- Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. Drenth, H. Thierry, & C. J. de Wolff (Eds.), *Handbook of work and organisational psychology* (2<sup>nd</sup> ed. pp. 5-33). Hove: Psychology Press.
- Naidu, B. (2005, July 10). R6m to help teachers fight stress. *Sunday Times*.
- Nelson, D. L., & Simmons, B. L. (2003). Health psychology and stress: A more positive approach. In J. C. Quick & L. E. Tetrick (Eds.), *Handbook of occupational health and psychology* (pp. 97-117). Washington, DC: American Psychological Association.
- Nixon, J., Marks, A., Rowland, S., & Walker, M. (2001). Towards a new academic professionalism: A manifesto of hope. *British Journal of Sociology of Education*, 22, 227-244.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.
- Rothmann, S. (2005, August 23). *Occupational stress, organizational commitment and ill health in South African organizations*. Paper presented at the 2<sup>nd</sup> ICOH International Conference on Psychosocial Factors at Work, Okayama, Japan.

- Rothmann, S., & Cilliers, F. V. N. (2004, May 28). *Shifting the boundaries of knowledge: The contribution of industrial psychology*. Paper presented at the National Research Foundation Conference, Tshwane University of Technology, Pretoria.
- Schaufeli, W. B. (2003). Past performance and future perspectives of burnout research. *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 Organizational Behavior, 25*, 1-23.
- Semmer, N., Zapf, D., & Dunckel, H. (1995). Assessing stress at work: A framework and an instrument. In O. Svane & C. Johansen (Eds.). *Work and health – Scientific basis of progress in the working environment* (pp. 105-113). Luxembourg: Office for Official Publications of the European Communities.
- Smyth, M., & Stone, A. A. (2003). Ecological momentary assessment research in behavioural medicine. *Journal of Happiness Studies, 4*, 35-52.
- SPSS Inc. (2003). *SPSS 12.0 for Windows*. Chicago, IL: Author.
- Steyn, H. S. (1999). *Praktiese betekenisvolheid: Die gebruik van effekgroottes*. Wetenskaplike bydrae – Reeks B: Natuurwetenskappe Nr 1170, Potchefstroom: PU vir CHO.
- Stone, A. A., & Shiffman, S. (1994). Ecological momentary assessment (EMA) in behavioral medicine. *Annals of Behavioral Medicine, 16*, 199-202.
- Tabachnick B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4<sup>th</sup> ed.). Boston, MA: Allyn & Bacon.
- Terry, D. J., & Jimmieson, N. L. (1999). Work control and employee well-being: A decade review. In C. L. Cooper & I. T. Robertson (Eds.). *International review of industrial and organisational psychology* (pp. 95-148). Chichester: Wiley.
- Toch, H. (1992). *Mosaic of despair: Human breakdowns in prison* (Revised ed.). Washington, DC: American Psychological Association.
- Turner, N., Barling, J., & Zacharatos, A. (2002). Positive psychology at work. In C. R. Snyder & S. J. Lopez (Eds.). *Handbook of positive psychology*. (pp. 715-728). Oxford, UK: Oxford University Press.
- Van de Vijver, F., & Leung, K. (1997). *Methods and data analysis for cross-cultural research*. Thousand Oaks, CA: Sage.
- Van Horn, J. E., Schaufeli, W. B., & Enzmann, E. (1999). Teacher burnout and lack of reciprocity. *Journal of Applied Social Psychology, 29*, 91-108.

- Warr, P. B. (1987). *Work, unemployment and mental health*. Oxford, UK: Clarendon Press.
- Zapf, D., Vogt, C., Seifert, C., Mertini, H., & Isic, A. (1999). Emotion work as a source of stress: The concept and development of an instrument. *European Journal of Work and Organizational Psychology*, 8, 371-400.

## CHAPTER 3

### CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter consists of conclusions regarding the literature review and the empirical study according to the specific objectives. Secondly, the limitations of the research are discussed. Lastly, recommendations for the organisations and future research are made.

#### 3.1 CONCLUSIONS

The first objective of this study was to determine how job demands and job resources are conceptualised in the literature. Extensive research has been done on job demands and job resource as possible causes of work-related illness. Demerouti , Bakker, Nachreiner and Schaufeli (2001) developed the Job Demands-Resources (JD-R) model. According to this model, different types of work can be defined by their own unique job characteristics, which can be grouped into two dimensions, namely job demands and job resources. According to Maslach, Schaufeli and Leiter (2001), various types of demands, notably overload, time pressure and job insecurity, are related to health impairment (such as exhaustion).

*Job demands* represent aspects of the job that could potentially cause strain in cases where they exceed the employee's adaptive capability. More specifically, job demands refer to those physical, social or organisational aspects of the job that require sustained physical and/or psychological (i.e. cognitive or emotional) effort on the part of the employee and that are therefore associated with certain physiological and/or psychological costs (e.g. exhaustion) (Hockey, 1997). Job demands are not negative, but may lead to job stress when employees are confronted by demands which require effort when they have not yet recovered from stress caused by previous demands (Meijman & Mulder, 1998). Karasek (1979) identifies various influential demands and recognises a restricted definition of job demands that are mainly quantitative in nature, such as workload and time pressure. The JD-R model supports this view by recognising that demanding characteristics of the working environment, work pressure, overload, emotional demands, and poor environmental conditions may lead to the impairment of health and ultimately to absenteeism (Schaufeli & Bakker, 2004; Semmer, Zapf, & Dunckel, 1995; Zapf, Vogt, Seifert, Mertini and Isic, 1999).

*Job resources* concern the extent to which the job offers *assets/opportunities* to individual employees. Job resources refer to those physical, psychological, social or organisational aspects of the job that: (1) reduce job demands and the associated physiological and psychological costs, (2) are functional in achieving work goals, and/or (3) stimulate personal growth, learning, and development (Demerouti et al., 2001). Thus, resources are not only necessary to deal with job demands, but also are important in their own right (Elsass & Veiga, 1997; Ganster & Fusilier, 1989; Hobfoll, 2001; Terry & Jimmieson, 1999).

Job resources have been recognised by Kahn (1990) as characteristics of work situations that shape the degree to which people employ and express themselves physically, cognitively and emotionally during role performance. According to Hackman and Oldham (1980), specific job characteristics motivate employees. These job characteristics induce so-called critical psychological states (e.g. meaningfulness), which drive people's attitudes and behaviours. Examples of job resources are time control, performance feedback, a supportive leader, and trusting relationships with colleagues.

The Conservation of Resources (COR) theory (Hobfoll, 1998, 2001) is a relevant theory for understanding the effects of job resources (or the lack thereof) on employees. The COR theory's central tenet is that people strive to obtain, retain and protect what they value. Resources are those personal energies and characteristics, objects and conditions that are valued by individuals or that serve as means for the attainment of other objects, personal characteristics, conditions or energies. Examples of resources include social support, job enhancement opportunities, degree of participation in decision making, being psychologically well or having an optimistic personality, level of autonomy, and established behaviour outcome contingencies (Hobfoll, 1989; Lee & Ashforth, 1996). The COR theory argues that personal resources affect each other and exist as a resource pool, and that an expansion of one is often associated with the other one being augmented (Hobfoll, 1999).

The second objective of this study was to investigate the psychometric properties of the Job Demands-Resources Scale (JD-RS). Overload, organisational support, advancement, growth opportunities and job insecurity form part of the dimensions identified that loaded on demands and resources in the principal component analysis of the pooled solution. Growth opportunities refers to having enough variety, opportunities to learn and independence in the job. Organisational support refers to relationships with supervisors and colleagues, flow of

information, communication, role clarity and participation in decision-making. Advancement includes items relating to remuneration, career possibilities and training opportunities. Overload includes items relating to pace and amount of work, mental load and emotional load. Job insecurity refers to uncertainty about the future. Tucker's phi coefficients confirmed that the structure of job demands and job resources are equivalent in the various occupations/organisations. The JDRS proved to be a reliable and equivalent measure for job demands and job resources in different occupations/organisations. A second-order principal component analysis resulted in two factors, namely job demands and job resources. This finding seems to confirm the theoretical model (i.e., die Job Demands-Resources model) that was used in this study.

The equivalence of one factor, namely organisational support was slightly lower than the guideline. A possible explanation for the lower equivalence of this factor is that the structure of organisational support for correctional officers and staff members at a university of technology is somewhat different as far as social support is concerned. In these two occupations/organisations social support is regarded as inherent in the job rather than just a form or support from the organisation. Probably social support is perceived as a very important part of the nature of the job. The strong loadings of social support items on growth opportunities in these two sample supports this notion. An item related to having a direct influence on the organisation's decisions (which is supposed to be a form of organisational support), loaded on growth opportunities in the correctional officer sample as well as the sample of employees in the insurance industry.

Engineers showed statistically significantly higher scores on overload than employees in the insurance industry. Correctional officers experienced less overload than the insurance staff as well as the university of technology and academics in higher education institutions. Engineers and academics in higher education institutions experienced the highest overload. Engineers experienced the highest growth opportunities of all the occupations/organisations. Academics in higher education institutions also experienced higher growth opportunities than the other groups, while correctional officers experienced the least growth opportunities.

Engineers, academics in higher education institutions and employees in the insurance industry reported higher levels of organisational support than correctional officers and employees of a university of technology. Engineers obtained higher scores on *advancement*

than the other groups. However, academics in higher education institutions reported the least advancement opportunities. Job insecurity was the highest for correctional officers and employees at a university of technology, and the lowest for engineers. The high levels of job insecurity of correctional officers and employees at a university of technology might be related to the transformation towards employment equity that is taking place in South African organisations.

### **3.2 LIMITATIONS**

This study had various limitations. Firstly, the sample sizes of all the occupations/organisations were not equal, which could have influenced the results of the factor analyses. Secondly, only five occupations/organisations were included in this study. Therefore, more organisations should be evaluated by means of the JDRS in future studies. Thirdly, in this study, participants were classified according to occupation and organisation. In future studies it might be useful to analyse the data of all organisations or all occupations separately.

### **3.3 RECOMMENDATIONS**

Recommendations are made for the organisations as well as for future research.

#### **3.3.1 Recommendations for the organisations**

In this study, job demands and job resources in different organisations and occupations were found to be different. Knowledge of these differences could be used to plan interventions to promote the work-related well-being of employees. The results supported the factorial validity and invariance of the JDRS for different occupations and organisations. Therefore, the JDRS could be utilised to measure and compare job demands and job resources in different occupations and organisations.

Employees (managers and workers) must become aware of the factors that contribute to positive and negative wellness, and specifically the role that job demands and job resources might play in affecting burnout and work engagement (Leiter, 1991; Schaufeli & Bakker,

2004). Organisations should aim to address job demands and job resources as possible sources of distress and eustress.

Interventions must be implemented to manage the workload in occupations such as engineers and academics. Academics seem to experience high workload and a lack of advancement. Training programmes focusing on how to deal with overload (e.g., time management) should be implemented.

A better understanding of the work context and the daily processes and practices of the correctional services will enhance capabilities of coping with the demands within this environment. Team-based interventions could enhance support (from management and colleagues) to help reduce stress. An employee assistance service could strengthen emotional and physical relationships in order to help handle demands. Training opportunities should be made available to help staff become more qualified in using the available resources to lower demands. It is important to obtain a balance between the demands and resources. The establishment of trust could also contribute positively towards well-being. Because of the negative impact of demands on work-related wellness, planned interventions could help staff to understand the depth of the causes rather than just the symptoms (Kompier & Kristensen, 2001; Lee & Ashforth, 1996).

### **3.3.2 Recommendations for future research**

Future research in South Africa should focus more on job demands and job resources within different occupations and working environments. In-depth research is needed regarding this phenomenon and therefore a longitudinal research would be applicable. Longitudinal research is needed to investigate the immediate and long-term effects of specific job demands and job resources in each occupation/organisation on employee health and wellness – as well as the outcomes thereof. Cross-sectional designs may not always clearly demonstrate the relationship between the variables (Smyth & Stone, 2003). They also tend to overestimate “pain” and/or emotions and feelings. Ecological Momentary Assessment (EMA) could be used to assess how employees experience job demands and job resources on a momentary basis in the natural environment (Stone & Shiffman, 1994). EMA permits the examination of events in their natural, spontaneous context, and can provide information that is complimentary to that obtainable from the cross-sectional type of design used in this study.

## References

- 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.
- Elsass, P. M., & Veiga, J. F. (1997). Job control and job strain: A test of three models. *Journal of Occupational Health Psychology, 2*, 195-211.
- Ganster, D. C., & Fusilier, M. R. (1989). Control in the workplace. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organisational psychology* (pp. 235-280). Chichester, UK: Wiley.
- Hackman, J. R., & Oldham, G. R. (1980). *Work redesign*. Reading, MA: Addison-Wesley.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*, 513-524.
- Hobfoll, S. E. (1998). *Stress, culture and community: The psychology and philosophy of stress*. New York: Plenum.
- Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology: An International Review, 50*, 337-370.
- Hockey, G. J. (1997). Compensatory control in the regulation of human performance under stress and high workload: A cognitive-energetical framework. *Biological Psychology, 45*, 73-93.
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal, 33*, 692-724.
- Karasek, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job design. *Administrative Science Quarterly, 24*, 285-308.
- Kompier, A. J., & Kristensen, T. S. (2001). Organisational work stress interventions in a theoretical, methodological and practical context. In J. Dunham (Ed.), *Stress in the workplace: Past, present and future* (pp. 19-33). London: Whurr Publishers.
- Lee, R. T., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates for the three dimensions of job burnout. *Journal of Asian & African Studies, 35*, 209-228.
- Leiter, M. P. (1991). Coping patterns as predictors of burnout: The function of control and escapist coping patterns. *Journal of Organisational Behavior, 12*, 123-144.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Reviews of Psychology, 52*, 397-422.

- Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. Drenth, H. Thierry, & C. J. de Wolff (Eds.). *Handbook of work and organisational psychology* (2<sup>nd</sup> ed. pp. 5-33). Hove: Psychology Press.
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, 25, 1-23.
- Semmer, N., Zapf, D., & Dunckel, H. (1995). Assessing stress at work: A framework and an instrument. In O. Svane & C. Johansen (Eds.). *Work and health – Scientific basis of progress in the working environment* (pp. 105-113). Luxembourg: Office for Official Publications of the European Communities.
- Smyth, M., & Stone, A. A. (2003). Ecological momentary assessment research in behavioural medicine. *Journal of Happiness Studies*, 4, 35-52.
- Stone, A. A., & Shiffman, S. (1994). Ecological momentary assessment (EMA) in behavioral medicine. *Annals of Behavioral Medicine*, 16, 199-202.
- Terry, D. J., & Jimmieson, N. L. (1999). Work control and employee well-being: A decade review. In C. L. Cooper & I. T. Robertson (Eds.). *International review of industrial and organisational psychology* (pp. 95-148). Chichester: Wiley.
- Zapf, D., Vogt, C., Seifert, C., Mertini, H., & Isic, A. (1999). Emotion work as a source of stress: The concept and development of an instrument. *European Journal of Work and Organizational Psychology*, 8, 371-400.