

**BURNOUT AND WORK ENGAGEMENT IN THE SOUTH
AFRICAN POLICE SERVICE**

Karina Storm, M.Com

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Promoter: Prof. S. Rothmann

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Dedicated to

My fiancé, Frans

and parents

Chris and Annamie



REMARKS

The reader is reminded of the following:

- The references as well as the editorial style as prescribed by the *Publication Manual (4th edition)* of the American Psychological Association (APA) were followed in this thesis. This practice is in line with the policy of the Programme in Industrial Psychology of the PU for CHE to use APA style in all scientific documents as from January 1999.

- The thesis is submitted in the form of four research articles.

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SUMMARY

Topic: Burnout and work engagement in the South African Police Service

Key terms: Burnout, work engagement, police, stress, coping, reliability, validity

Tracking and addressing police members' effectiveness in areas that could impact on the standard of their services is important. Burnout and work engagement are specific focus areas in this regard. To measure burnout and work engagement, it is important to use reliable and valid instruments. However, there is a lack of empirical research systematically investigating police burnout and work engagement in South Africa, as well as serious limitations, including poorly designed studies, a lack of sophisticated statistical analyses and poorly controlled studies. Furthermore, South Africa is a multicultural society and therefore, when burnout and work engagement measures are applied to different cultural groups, issues of equivalence and bias become important.

Because a lack of South African norms exists for the Maslach Burnout Inventory – General Survey (MBI-GS) and Utrecht Work Engagement Scale (UWES), it is difficult to identify burnout and work engagement. Therefore, it is important to determine norms for the levels of burnout and work engagement that could serve as reference for police officers in the South African Police Service (SAPS). It also seems relevant to consider differences in burnout and work engagement between different demographic groups as well as between the different provinces in South Africa. Furthermore, it appears as if job stressors and coping strategies may be related to burnout and work engagement. However, no studies were found that included these factors in a causal model of burnout or work engagement in police officers in South Africa.

The objectives of this research were to standardise the MBI-GS and the UWES for the SAPS and to determine equivalence and bias for each instrument, to determine norms and demographic differences between burnout and work engagement levels and to test a causal model that could explain the role of job stress and coping in burnout and work engagement.

The research method for each of the four articles consists of a brief literature review and an empirical study. A cross-sectional survey design was used. Random samples ($N = 2\,396$ for research articles 1, 2 and 3 and $N = 1\,910$ for research article 4) were taken from police stations in nine provinces. The MBI-GS, UWES, Police Stress Inventory (PSI), COPE questionnaire and a biographical questionnaire were administered.

Structural equation modelling confirmed a 3-factor model of burnout, consisting of exhaustion, cynicism and professional efficacy. The 3-factor model of work engagement represented the data quite well, but a 1-factor model fitted the data even better. The MBI-GS and UWES both showed acceptable internal consistencies. Exploratory factor analysis with target rotations confirmed the construct equivalence of the MBI-GS and UWES for different race groups in the SAPS. No evidence for item bias was found for the MBI-GS or the UWES.

Norms were set for the burnout and work engagement levels. This sample of police officers in the SAPS was used as the normative sample and could serve as reference for relative burnout and work engagement of other police members in the SAPS. Practically significant differences existed between burnout in three demographic groups (education, race and province).

The structural equation analysis showed that job demands, lack of resources, non-active coping, avoidance and not seeking emotional support are related to exhaustion. Non-active coping and avoidance coping were associated with cynicism. Lack of resources, non-active coping and avoidance were associated with low professional efficacy. Predictors of work engagement were active coping, lack of job demands, non-avoidance, seeking emotional support, turning to religion and availability of resources.

Recommendations for future research were made.

OPSOMMING

Onderwerp: Uitbranding en werksbegeestering in die Suid-Afrikaanse Polisie Diens

Sleuteltermes: Uitbranding, werksbegeestering, polisie, stres, coping, betroubaarheid, geldigheid

Dit is belangrik om polisielede se effektiwiteit na te vors en daarmee te handel in areas wat 'n uitwerking het op die standaard van hulle dienste. Spesifieke fokusareas in hierdie verband is uitbranding en werksbegeestering. Die gebruik van betroubare en geldige meetinstrumente is belangrik vir die meting van hierdie konstrakte. Dit word egter bemoeilik deur die afwesigheid van empiriese navorsing in Suid-Afrika wat uitbranding en werksbegeestering van polisielede sistematies ondersoek asook ernstige beperkinge, wat insluit swak ontwerpte studies, 'n gebrek aan gesofistikeerde statistiese tegnieke en swak gekontroleerde studies. Omdat Suid-Afrika 'n multikulturele land is, is die meting van ekwivalensie en sydigheid ook belangrik wanneer meetinstrumente gebruik word vir verskillende kultuurgroepe.

Omdat daar geen Suid-Afrikaanse norme vir die Maslach Uitbrandingsvraelys – Algemene Opname (MBI-GS) en Utrecht-werksbegeesteringskaal (UWES) bestaan nie, is dit moeilik om uitbranding en werksbegeestering te identifiseer. Dit is daarom belangrik om norme te bepaal vir die vlakke van uitbranding en werksbegeestering wat as verwysing kan dien vir polisielede in die Suid-Afrikaanse Polisie Diens (SAPD). Dit wil ook voorkom of dit relevant is om verskille in uitbranding en werksbegeestering te ondersoek tussen verskillende demografiese en etniese groepe, asook tussen verskillende provinsies in Suid-Afrika. Dit wil ook voorkom of werkstres en coping verwant kan wees aan uitbranding en werksbegeestering. Geen studies kon gevind word wat hierdie faktore insluit in 'n oorsaaklike model van uitbranding of werksbegeestering by polisiebeamptes in Suid-Afrika nie.

Die doelstellings van hierdie navorsing was om die MBI-GS en UWES te standaardiseer vir die SAPD, om ekwivalensie en sydigheid vir elk van hierdie meetinstrumente te bepaal, om norme en demografiese verskille ten opsigte van uitbranding en werksbegeestering te bepaal asook om 'n oorsaaklike model te toets wat die rol van werkstres en coping in uitbranding en werksbegeestering kon verduidelik.

Die navorsingsmetode vir elk van die vier artikels het bestaan uit 'n kort literatuuroorsig en 'n empiriese studie. 'n Dwarsdeursnee-opnameontwerp is gebruik. Ewekansige steekproewe ($N = 2\ 396$ vir navorsingsartikel 1, 2 en 3 en $N = 1\ 910$ vir navorsingsartikel 4) is van polisieestasies in nege provinsies geneem. Die MBI-GS, UWES, Polisiestresvraelys (PSI), COPE-vraelys en 'n biografiese vraelys is afgeneem.

Strukturele vergelykingsmodellering het 'n 3-faktormodel van uitbranding bestaande uit uitputting, sinisme en professionele doeltreffendheid bevestig. Die 3-faktormodel van werksbegeestering is bevestig, alhoewel 'n 1-faktormodel die data selfs beter gepas het. Die MBI-GS en UWES het beide aanvaarbare interne konsekwentheid getoon. Verkennende faktoranalise met teikenrotasies het die konstrukekwivalensie van die MBI-GS en UWES vir verskillende rassegroepe in die SAPD bevestig. Geen bewyse van sydigheid vir die items van die MBI-GS en UWES is gevind nie.

Norme is gestel vir die uitbrandings- en werksbegeesteringsvlakke. Hierdie steekproef van polisielede is gebruik as 'n normatiewe steekproef en kan dien as verwysingsgroep vir relatiewe uitbranding en werksbegeestering van ander polisielede in die SAPD. Prakties betekenisvolle verskille is gevind tussen uitbranding en drie demografiese eienskappe (vlak van opleiding, ras en provinsie).

Die strukturele vergelykingsontleding het daarop gedui dat werkseise, gebrek aan hulpbronne, nie-aktiewe coping, en lae soeke na emosionele ondersteuning geassosieer word met uitputting. Nie-aktiewe coping en vermyding-coping het verband gehou met sinisme. 'n Gebrek aan hulpbronne, nie-aktiewe coping en vermyding het verband gehou met lae professionele doeltreffendheid. Voorspellers van werksbegeestering was aktiewe coping, lae werkeise, nie-vermyding, soeke na emosionele ondersteuning, geloofsoriëntering en beskikbaarheid van hulpbronne.

Aanbevelings vir toekomstige navorsing is aan die hand gedoen.

CHAPTER 1

INTRODUCTION

This thesis is about burnout and work engagement in the South African Police Service.

In this chapter the problem statement is discussed. The research objectives are set out, which include the general objective and specific objectives. The research method is explained and the division of chapters given.

1.1 PROBLEM STATEMENT

Police work has often been cited as particularly stressful (Anson, Johnson & Anson, 1997; Goodman, 1990; Kroes & Hurrell, 1975; Violanti, 1996). Police officers experience various job-related stressors, such as dealing with unlawful, often dangerous actions of citizens (Anshel, 2000), a lack of social support (Violanti, 1993) and abusive treatment in the workplace (Hart, Wearing & Headey, 1995). Police officers face several other negative aspects, such as a lack of respect from members of the public, excessive paperwork, shift work, threats of violence, and the militaristic nature and bureaucratic structure of the police organisation (Greller & Parsons, 1988; Jermier, Gaines & McIntosh, 1989; Patterson, 1999). These stressors are also applicable to police members of the South African Police Service (SAPS), even more so, considering the longstanding and continuing socio-economic and political difficulties of the past 30 years that are characterised by high levels of crime and violence (Gulle, Tredoux & Foster, 1998; Marks, 1995; Nel & Burgers, 1996).

As a result of the various stressful aspects of policing, a variety of symptoms and reactions may occur (Hills & Norvell, 1991; Kaufman & Beehr, 1989). These include deteriorating work performance (e.g. absenteeism and low morale), negative psychological states (e.g. burnout, frustration, depression and anger), and psychosomatic and physical conditions (e.g. headaches and ulcers). Anshel (2000), Nell (1994), Rothmann and Agathagelou (2000) and Rothmann and Strijdom (2002) found high rates of illness, post-traumatic stress, burnout, alcohol abuse and suicides within the police.

Because a productive, motivated and healthy police service is an important contributor to the stability and resulting economic growth and development of the country, tracking and addressing police members' effectiveness in areas that could impact on the standard of their services is of great importance. Burnout and work engagement of employees are specific focus areas for research and intervention in this regard (Maslach, Schaufeli & Leiter, 2001).

Although Maslach and Jackson (1986, p. 1) defined burnout as "... a syndrome of emotional exhaustion and cynicism that occurs among individuals who do people work of some kind", researchers currently acknowledge that employees in almost any job can develop burnout (Schaufeli & Enzmann, 1998). Schaufeli and Enzmann (1998, p. 36) also identified exhaustion as a core indicator of burnout and a sense of reduced effectiveness as an accompanying symptom, but added three additional general symptoms, namely distress (affective, cognitive, physical and behavioural), decreased motivation, and dysfunctional attitudes and behaviours at work. They define burnout as "a persistent, negative, work-related state of mind in 'normal' individuals that is primarily characterised by exhaustion, which is accompanied by distress, a sense of reduced effectiveness, decreased motivation, and the development of dysfunctional attitudes and behaviours at work". Burnout has been studied frequently in various occupational groups such as teachers, nurses, physicians and social workers. Recently it became clear that burnout also exists outside the human services (Maslach & Leiter, 1997). Burnout of police officers has rarely been investigated, despite the extensive literature on job stress in policing. However, a recent study by Kop, Euwema and Schaufeli (1999) focused on burnout of police members in the Netherlands.

Contrary to the case of burnout, the concept of work engagement does not have a long research history. The concept was developed from a perspective of positive psychology. In the past, psychological health research almost exclusively focused on psychological dysfunction, ill-health and unwell-being, thereby neglecting the psychological health and well-being of individuals (Seligman & Csikszentmihalyi, 2000). Even today, the use of basic terms is negatively biased and the focus is on *absence of illness* rather than the *presence of wellness*. This trend is also evident in the police stress literature, where the focus of research on the negative aspects of policing resulted in the neglecting of well-being and health of police officers (Hart et al., 1995). Furthermore, Hart et al. (1995) showed that there is a need to consider both negative *and* positive experiences when trying to determine the causes of police officers' psychological well-being. Unfortunately, no generally accepted theory on the

nature and dynamic of optimal psychological functioning or wellness of police officers seems to exist.

A new paradigm, the so-called "positive psychology", recently emerged that focuses on the presence of wellness, rather than the absence of illness. The aim of positive psychology is to study the strengths and virtues of human beings. Thus, treatment is not just about fixing what is broken, but also identifying and nurturing what is best (Seligman & Csikszentmihalyi, 2000). Also, Antonovsky (1979) introduced the construct of *salutogenesis* (Latin *salus* = health, Greek *genesis* = *origin*), proposing that the origins of health rather than those of disease should be studied. Strümpfer (1995) argued that the construct of *salutogenesis* should be broadened from a focus on health only, to *fortigenesis* (Latin *fortis* = strong), referring to strength. Wissing and Van Eeden (1997) suggested a new sub-discipline of psychofortology and suggested that not only the origins of psychological well-being should be studied, but also the nature, manifestations and ways to enhance psychological well-being.

A similar shift from burnout towards its opposite – work engagement – has recently been put forward by Maslach et al. (2001). This implies that employees' adaptation at work could also be studied in a positive way. According to Maslach and Leiter (1997), work engagement is characterised by energy, involvement and efficacy, which are the direct opposites of the burnout dimensions exhaustion, cynicism and lack of professional efficacy, respectively. Engaged individuals have a sense of energetic and effective connection with their work activities and they see themselves as able to deal completely with the demands of their job. Schaufeli, Salanova, González-Romá and Bakker (2002) take a different approach and consider burnout and work engagement as opposite concepts that should be measured independently with different instruments. They define work engagement as a positive, fulfilling, work-related state of mind that is characterised by vigour, dedication and absorption. Rather than a momentary and specific state, engagement refers to a more persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual or behaviour.

It is important to use reliable and valid instruments for the measurement of burnout and work engagement. When determining factorial validity, confirmatory factor analysis should be used, because exploratory factor analysis shows some weaknesses (Byrne, 1991). Regarding the measurement of burnout, the Maslach Burnout Inventory (Maslach & Jackson, 1981a,

1986) was adapted for use in non-contactual occupations. This new version was called the MBI-General Survey (MBI-GS) (Schaufeli, Leiter, Maslach & Jackson, 1996). For the measurement of burnout, Schaufeli et al. (2002) developed the Utrecht Work Engagement Scale (UWES). The importance of reliable, valid, equivalent and unbiased instruments is evident, not only for the purpose of empirical research, but also for individual assessment. However, there is a lack of empirical research systematically investigating police burnout and work engagement in South Africa, as well as serious limitations, including poorly designed studies, a lack of sophisticated statistical analyses and poorly controlled studies (Rothmann, 2002).

The psychometric qualities of the MBI-GS are encouraging. Internal consistencies are satisfactory, ranging from 0,73 (Cynicism) to 0,91 (Exhaustion) (Leiter & Schaufeli, 1996). Regarding the factor validity of the MBI-GS, several studies confirmed a three-factor structure (Leiter & Schaufeli, 1996; Schaufeli et al., 2002; Schutte, Toppinen, Kalimo & Schaufeli, 2000; Taris, Schreurs & Schaufeli, 1999). The three dimensions of the MBI-GS are also interrelated. It therefore appears that burnout can validly be measured across a range of different occupations, despite the differences between human service occupations and non-contactual professions. According to Taris et al. (1999), the strong resemblance between both versions of the MBI ensures maximum comparability and generalisability of results obtained for one occupation's group to another.

Regarding the psychometric properties of the UWES, Schaufeli et al. (2002) found that the three engagement scales have sufficient internal consistencies. The three scales are moderately to strongly related. Two recent studies demonstrated the factorial validity of the UWES (Schaufeli et al., 2002; Schaufeli, Martinez, Pinto, Salanova & Bakker, in press). The fit of the hypothesised three-factor model to the data is superior to a one-factor solution (Maslach et al., 2001; Schaufeli et al., 2002, in press).

South Africa is a multicultural society and the SAPS employ individuals of diverse cultural backgrounds. Within the South African context it cannot be taken for granted that scores obtained in one culture can be compared across cultural groups. Therefore, when burnout and work engagement measures are applied to different cultural groups, issues of measurement equivalence and bias become important. Construct equivalence, which is the most frequently studied type of equivalence (Van de Vijver & Leung, 1997) indicates the extent to which the

same construct is measured across all cultural groups studied. According to Van de Vijver and Leung (1997), item bias should also be assessed when measuring instruments are used in multicultural contexts. If unacceptable construct equivalence is found, item bias should be computed (Van de Vijver & Leung, 1997). Item bias can be produced by sources such as incidental differences in appropriateness of the item content and inadequate item formulation. Bias will lower the equivalence of a measuring instrument. In the South African context, it is necessary to determine equivalence and bias for the MBI-GS and UWES.

One of the problems in assessing the burnout and work engagement levels of police members is the lack of validated cut-off points (Schaufeli & Van Dierendonck, 1995). Because of a lack of South African norms for the MBI-GS, it is difficult to identify burnout at an early stage, and the implementation of intervention programmes is hampered. A lack of norms also exists for the UWES. Therefore, it seems important to determine norms for the levels of burnout and work engagement that could serve as reference for police officers in the SAPS.

Most studies do not systematically investigate demographic differences in either burnout or work engagement (Maslach et al., 2001; Schaufeli & Enzmann, 1998). Frequently studied demographic variables include age, gender and level of education. Additional demographic correlates of burnout researched in police work include the size of the force in which one works, as well as the rank of the officer. It also seems relevant to consider differences in burnout and work engagement between different ethnic groups as well as between the different provinces in South Africa.

Burnout is observed more often among younger employees compared to those older than 30 or 40 years. Furthermore, burnout is negatively related to work experience. Künzel and Schulte (1986) interpret the greater incidence of burnout in younger and less experienced employees in terms of reality shock, while Cherniss (1980) regards it as an indicator of an identity crisis due to unsuccessful occupational socialisation. Maslach, Jackson and Leiter (1996) show that burnout symptoms decline with growing age or work experience. Women tend to score higher on emotional exhaustion, whereas men score higher on depersonalisation (Schaufeli & Enzmann, 1998). Cash (1988) found that individuals with a higher level of education were more prone to burnout than less educated employees. No information is available regarding the relationship between work engagement and different demographic variables.

According to Schaufeli and Enzmann (1998), possible antecedents of burnout can be classified into biographical characteristics, personality characteristics, work-related attitudes and work and organisational characteristics. This research will focus on the influence of job stress and coping on police officers.

Stress is defined in terms of a disruption of the equilibrium of the cognitive-emotional-environmental system by external factors (Lazarus & Folkman, 1984). Two categories of potential stressors in police work emerge (Alexander, 1999; Biggam, Power, MacDonald, Carcary & Moodie, 1997; Brown & Campbell, 1994). Firstly, various aspects of the very nature of police work, such as physical threat, violence, exposure to danger and facing the unknown, and secondly organisational stressors, for example management style, poor communication and lack of support (Kop et al., 1999; Stearns & Moore, 1990). Findings indicate that organisational stressors are more prevalent compared to inherent police stressors (Alexander, 1999). Organisational stressors can be divided into job demands and lack of job resources (Schaufeli & Enzmann, 1998; Pienaar & Rothmann, in press). It seems as if the three burnout dimensions are differentially related to job demands and resources. Leiter (1991, 1993) found that job demands are more strongly related to exhaustion, while job resources are more strongly related to cynicism and professional efficacy. Lee and Ashforth (1996) conducted a meta-analysis that included over 60 studies and found that job demands were strongly associated with exhaustion. Cynicism (depersonalisation) was correlated with both resources and demands, while professional efficacy (personal accomplishment) was largely uncorrelated to job demands and job resources.

As regards work engagement, Demerouti, Bakker, Nachreiner and Schaufeli (2001) found that a lack of job resources is primarily related to disengagement. Schaufeli and Bakker (2002) tested their so-called Comprehensive Burnout and Engagement (COBE) model and found that job resources exclusively predict work engagement.

One of the basic issues in the burnout domain concerns coping, or ways in which an individual can attempt to deal with job stressors to ward off aversive strains (Beehr, Johnson & Nieva, 1995). Folkman, Lazarus, Gruen and DeLongis (1986, p. 572) define coping as "the person's cognitive and behavioural efforts to manage (reduce, minimise or tolerate) the internal and external demands of the person-environment transaction that is appraised as

taxing or exceeding the person's resources". Inadequate coping resources and ineffective coping strategies strongly predispose a worker to burnout (Brill, 1984). When poor coping strategies are adopted (e.g. avoidance, mental/behavioural disengagement, etc.) burnout can develop (Brill, 1984; Schaufeli & Enzmann, 1998). However, when a successful coping strategy is followed (e.g. active problem solving), goals are achieved, professional efficacy is enhanced and a sense of existential significance is fostered (Schaufeli & Enzmann, 1998). Beehr et al. (1995) showed that problem-focused coping strategies were negatively related to strains (somatic complaints, exhaustion, depersonalisation and thoughts of suicide) among police officers. Emotion-focused coping strategies were related to every police strain except the abuse of alcohol.

It is clear from the above-mentioned discussion that job stressors and coping strategies might be related to burnout and work engagement of police officers. However, no studies including these factors in a causal model of burnout or work engagement in police officers in South Africa were found in the literature.

From the problem statement the following research questions emerge:

- What are the construct validity and internal consistency of the MBI-GS for SAPS members?
- Do the scales of the MBI-GS show construct equivalence for different race groups in the SAPS and are the items of the inventory unbiased?
- What are the construct validity and internal consistency of the UWES for SAPS members?
- Do the scales of the UWES show construct equivalence for different race groups in the SAPS and are the items of the scale unbiased?
- Which norms could be set to classify SAPS members according to their levels of burnout and work engagement?
- Do demographic groups in the SAPS differ regarding their levels of burnout and work engagement?
- Can job stress and coping strategies predict the burnout and work engagement of SAPS members?
- Which recommendations could be made to prevent and/or manage burnout and promote work engagement of SAPS members?

- Which recommendations could be made regarding burnout and work engagement for future research?

This research will make the following contributions to the subject of Industrial Psychology and the practice thereof in organisations:

- It will result in a standardised measuring instrument for burnout, which has been proven to be reliable, valid, unbiased and equivalent for different race groups.
- It will result in a standardised measuring instrument for work engagement, which has been proven to be reliable, valid, unbiased and equivalent for different race groups.
- Norms will exist to classify SAPS members according to their levels of burnout and work engagement.
- A causal model of burnout and work engagement will exist, which could be used to predict burnout and work engagement in the police.

1.2 RESEARCH OBJECTIVES

The research objectives are divided into a general objective and specific objectives.

1.2.1 General objective

With reference to the above formulation of the problem, the general objective of this research is to standardise the Maslach Burnout Inventory – General Survey and the Utrecht Work Engagement Scale for the South African Police Service and to test a causal model which could explain the role of job stress and coping in burnout and work engagement.

1.2.2 Specific objectives

The specific research objectives are as follows:

- To determine the construct validity and internal consistency of the MBI-GS for SAPS members.

- To determine if the scales of the MBI-GS show construct equivalence for different race groups in the SAPS and if the items of the inventory are unbiased.
- To determine the construct validity and internal consistency of the UWES for SAPS members.
- To determine if the scales of the UWES show construct equivalence for different race groups in the SAPS and if the items of the inventory are unbiased.
- To set norms to classify SAPS members according to their levels of burnout and work engagement.
- To determine if demographic groups in the SAPS differ regarding their levels of burnout and work engagement.
- To determine if job stress and coping strategies can predict the burnout and work engagement of SAPS members.
- To make recommendations to prevent and/or manage the burnout and promote the work engagement of SAPS members.
- To make recommendations for future research.

1.3 RESEARCH METHOD

The research method for each of the four articles which are submitted for the purposes of this thesis consists of a brief literature review and an empirical study. Because separate chapters were not targeted for literature reviews, this paragraph focuses on aspects relevant to the empirical studies that were conducted. The reader should note that a literature study was conducted for the purposes of each article.

1.3.1 Research design

A survey design is used to reach the research objectives. The specific design is the cross-sectional design, whereby a sample is drawn from a population at one time (Shaughnessy & Zechmeister, 1997). Information collected is used to describe the population at that time. This design can also be used to assess interrelationships among variables within a population. According to Shaughnessy and Zechmeister (1997) this design is ideally suited to the descriptive and predictive functions associated with correctional research.

Structural equation modelling is used to address the problems associated with this design (Byrne, 2001). Structural equation modelling is also used to test causal models of burnout and work engagement. Structural equation modelling is a statistical methodology that takes a confirmatory (i.e. hypothesis-testing) approach to the analysis of a structural theory bearing on some phenomenon (Byrne, 2001). The term "structural equation modelling" (SEM) conveys two important aspects of the procedure:

- that the causal processes under study are represented by a series of structural (i.e. regression) equations, and
- that these structural relations can be modelled pictorially to enable a clear conceptualisation of the theory under study.

1.3.2 Study population

Random samples ($N = 2\,396$ for research articles 1, 2 and 3 and $N = 1\,910$ for research article 4) were taken from police stations in the Limpopo Province, Gauteng, Mpumalanga, Northern Cape, Western Cape, Eastern Cape, Natal and the North West Province. The following formula proposed by Kerlinger and Lee (2000) was used to determine the sample size for this study:

$$n' = \frac{n}{1 + \frac{n}{N}}$$

and

$$n = z^2 \times \frac{SD^2}{d^2}$$

where n' = estimated sample size; n = the estimated sample size using the formula; N = the size of the population; z = standard score corresponding to the specified probability of risk; SD = the standard deviation of the population, and d = the specified deviation.

The values for z , SD and d have been determined, based on previous studies of burnout in South Africa (Storm & Rothmann, in press). Stations were divided into small (fewer than 25 staff members), medium (25–100 staff members) and large (more than 100 staff members)

stations. All police members at randomly identified small and medium stations in each of the provinces were asked to complete the questionnaires. In the large stations stratified random samples were taken according to sex and race.

1.3.3 Measuring battery

Five questionnaires are used in the empirical study, namely the Maslach Burnout Inventory – General Survey (MBI-GS) (Schaufeli et al., 1996), the Utrecht Work Engagement Scale (UWES) (Schaufeli et al., 2002), the Police Stress Inventory (PSI) (Pienaar & Rothmann, in press), the COPE Questionnaire (COPE) (Carver, Scheier & Weintraub, 1989) and a biographical questionnaire.

The *Maslach Burnout Inventory – General Survey (MBI-GS)* (Schaufeli et al., 1996) measures respondents' relationships with their work on a continuum from engagement to burnout. The MBI-GS has three subscales: Exhaustion (Ex) (five items; e.g. "I feel used up at the end of the workday"), Cynicism (Cy) (five items; e.g. "I have become less enthusiastic about my work") and Professional Efficacy (PE) (six items; e.g. "In my opinion, I am good at my job"). Together the subscales of the MBI-GS provide a three-dimensional perspective on burnout. Internal consistencies (Cronbach coefficient alphas) reported by Schaufeli et al. (1996) varied from 0,87 to 0,89 for Exhaustion, 0,73 to 0,84 for Cynicism and 0,76 to 0,84 for Professional Efficacy. Test-retest reliabilities after one year were 0,65 (Exhaustion), 0,60 (Cynicism) and 0,67 (Professional Efficacy) (Maslach et al., 1996). All items are scored on a 7-point frequency rating scale ranging from 0 ("never") to 6 ("daily"). High scores on Ex and Cy, and low scores on PE are indicative of burnout.

The *Utrecht Work Engagement Scale (UWES)* (Schaufeli et al., 2002) is used to measure the levels of work engagement of the participants. The UWES includes three dimensions, namely, vigour, dedication and absorption, which are conceptually seen as the opposite of burnout and are scored on a seven-point scale. The UWES is scored on a seven-point frequency rating scale, varying from 0 ("never") to 6 ("always") and include questions like "I am bursting with energy every day in my work"; "Time flies when I am at work" and "My job inspires me". The alpha coefficients for the three sub-scales varied between 0,68 and 0,91. The alpha coefficient could be improved (α varies between 0,78 and 0,89 for the three

sub-scales) by eliminating a few items without substantially decreasing the scale's internal consistency.

The *Police Stress Inventory* (PSI) is used to measure job stress. Pienaar and Rothmann (in press) constructed the PSI for police officers in the SAPS based on the findings of several research regarding stressors specific to the policing environment. The PSI is scored on a nine-point frequency and intensity rating scale, varying from 0 ("low") to 9 ("high"). Factor analysis with a varimax rotation of the items identified three underlying factors, namely Job Demands, Lack of Resources and Inherent Police Stressors. Pienaar and Rothmann (in press) found acceptable internal consistencies for the PSI (Job Demands: $\alpha = 0,92$; Lack of Resources: $\alpha = 0,92$; Police Stressors: $\alpha = 0,89$).

The *COPE Questionnaire* (COPE) (Carver et al., 1989) is used to measure participants' coping strategies. The COPE is a multidimensional 53-item coping questionnaire that indicates the different ways people cope in different circumstances (Carver et al., 1989). Although the original questionnaire measures 13 different coping strategies, Pienaar and Rothmann (in press) subjected the COPE to a principal components factor analysis with a varimax rotation. Three internally consistent factors were extracted, namely Active Coping (16 items), Avoidance (13 items), Seeking Emotional Support (7 items) and Turning to Religion (3 items). The alpha coefficients of the three scales are 0,92, 0,86, 0,80 and 0,83 respectively. All these values are acceptable ($\alpha > 0,70$, Nunnally & Bernstein, 1994), and thus indicate the internal consistency of the factors of the COPE. Test-retest reliability varies from 0,46 to 0,86 and from 0,42 tot 0,89 (applied after two weeks).

A questionnaire was developed to gather information about the demographic characteristics of the participants. This questionnaire gave participants the option of supplying their name and service number. Other information that was gathered included: province and station, age, gender, years of service, years in current position (to assess advancement), educational qualifications, marital status, satisfaction with relationships with significant other, language, history of disciplinary action, self-rated performance, self-rated job satisfaction, medical conditions, use of prescription and over-the-counter medicine, reasons for medication, number of alcoholic drinks per week, smoking behaviour, number of cigarettes per day, other drug use and physical exercise.

1.3.4 Statistical analysis

The statistical analysis is carried out with the help of the SAS program (SAS Institute, 2000). Cronbach alpha coefficients, inter-item correlation coefficients and factor analysis are used to assess the reliability and validity of the measuring instruments (Clark & Watson, 1995). Descriptive statistics (e.g. means, standard deviations, skewness and kurtosis) are used to analyse the data.

Principal factors extraction with varimax rotation is performed through SAS FACTOR on the items of the MBI-GS, UWES, PSI and COPE. Principal components extraction is used prior to principal factors extraction to estimate the number of factors, presence of outliers and factorability of the correlation matrices. Furthermore, the oblique method with a promax rotation is used to determine the interfactor correlations of each measuring instrument. If correlations higher than 0,30 are found, this method is used to extract the factor structure.

Cronbach alpha coefficients and inter-item correlations are used to assess the internal consistency of the measuring instruments (Clark & Watson, 1995). Coefficient alpha conveys important information regarding the proportion of error variance contained in a scale. According to Clark and Watson (1995), the average inter-item correlation coefficient (which is a straightforward measure of internal consistency) is a useful index to supplement information supplied by coefficient alpha. However, unidimensionality of a scale cannot be ensured simply by focusing on the mean inter-item correlation – it is necessary to examine the range and distribution of these correlations as well.

The level of statistical significance is set at $p \leq 0,05$. Effect sizes are used to decide on the significance of the findings. Pearson product-moment correlation coefficients are used to specify the relationships between the variables. A cut-off point of 0,30 (medium effect, Cohen, 1988) is set for the practical significance of correlation coefficients. T-tests and one-way analysis of variance (ANOVA) are used to determine differences between the subgroups in the sample. The following formula is used to determine the practical significance of differences (d) when t-tests are used (Steyn, 1999):

$$d = \frac{Mean_A - Mean_B}{SD_{MAX}}$$

where

$Mean_A$ = Mean of the first group

$Mean_B$ = Mean of the second group

SD_{MAX} = Highest standard deviation of the two groups

The following formula is used to determine the practical significance of means of more than two groups (Steyn, 1999):

$$d = \frac{Mean_A - Mean_B}{\text{Root MSE}}$$

where

$Mean_A$ = Mean of the first group

$Mean_B$ = Mean of the second group

Root MSE = Root Mean Square Error

A cut-off point of 0,50 (medium effect, Cohen, 1988) is set for the practical significance of differences between means.

Canonical correlation is used to determine the relationships between the dimensions of burnout, work engagement, job stress and coping. The purpose of canonical correlation is to analyse the relationship between two sets of variables (Tabachnick & Fidell, 2001). Canonical correlation is considered a descriptive technique rather than a hypothesis-testing procedure.

Construct (structural) equivalence is used to compare the factor structures of the MBI-GS and UWES for different cultural groups included in the study. Exploratory factor analysis and target (Procrustean) rotation are used to determine construct equivalence (Van de Vijver & Leung, 1997). According to Van de Vijver and Leung (1997), it is not acceptable to conduct factor analyses for different cultural groups to address the similarity of factor-analytical

solutions because the spatial orientation of factors in factor analysis is arbitrary. Rather, prior to an evaluation of the agreement of factors in different cultural groups, the matrices of loadings should be rotated with regard to each other (i.e., target rotations should be carried out). The factor loadings of separate groups are rotated either to one target group or to a joint common matrix of factor loadings. After target rotation has been carried out, factorial agreement is estimated using Tucker's coefficient of agreement (Tucker's phi). This coefficient is insensitive to multiplications of the factor loadings, but sensitive to a constant added to all loadings of a factor. The following formula is used to compute Tucker's phi (Van de Vijver & Leung, 1997):

$$p_{xy} = \frac{\sum x_i y_i}{\sqrt{\sum x_i^2 y_i^2}}$$

This index does not have a known sampling distribution, hence it is impossible to establish confidence intervals. Values higher than 0,95 are seen as evidence for factorial similarity, whereas values lower than 0,85 are taken to point to non-negligible incongruities (Van de Vijver & Leung, 1997). This index is sufficiently accurate to examine factorial similarity at a global level. However, analyses should be carried out to detect bias in appropriate items.

Structural equation modelling (SEM) methods as implemented by AMOS (Arbuckle, 1997) are used to test the factorial models for the MBI-GS and UWES, and to construct causal models of burnout and work engagement. Using the maximum likelihood method, SEM is a statistical methodology that takes a confirmatory (i.e. hypothesis-testing) approach to the analysis of a structural theory bearing on some phenomenon (Byrne, 2001). Several aspects of SEM set it apart from the older generation of multivariate procedures (Byrne, 2001). Firstly, it takes a confirmatory rather than an exploratory approach to data analysis. Furthermore, by demanding that the pattern of inter-variable relations be specified, a priori, SEM lends itself well to the analysis of data for inferential purposes. Secondly, although traditional multivariate procedures are incapable of either assessing or correcting for measurement error, SEM provides precise estimates of these error variance parameters. Thirdly, SEM procedures can incorporate both unobserved (latent) and observed variables.

Hypothesised relationships are tested empirically for goodness of fit with the sample data. The χ^2 statistic and several other goodness-of-fit indices summarise the degree of correspondence between the implied and observed covariance matrices. Jöreskog and Sörborn (1993) suggest that the χ^2 value may be considered more appropriately as a badness-of-fit rather than as a goodness-of-fit measure in the sense that a small χ^2 value is indicative of good fit. However, because the χ^2 statistic equals $(N - 1)F_{\min}$, this value tends to be substantial when the model does not hold and the sample size is large (Byrne, 2001). A large χ^2 relative to the degrees of freedom indicates a need to modify the model to fit the data better. Researchers have addressed the χ^2 limitations by developing goodness-of-fit indexes that take a more pragmatic approach to the evaluation process. One of the first fit statistics to address this problem was the χ^2 /degrees of freedom ratio (CMIN/DF) (Wheaton, Muthén, Alwin & Summers, 1977). These criteria, commonly referred to as "subjective" or "practical" indexes of fit, are typically used as adjuncts to the χ^2 statistic.

The Goodness of Fit Index (GFI) indicates the relative amount of the variances/co-variances in the sample predicted by the estimates of the population. It usually varies between 0 and 1 and a result of 0,90 or above indicates a good model fit. In addition, the Adjusted Goodness-of-Fit Index (AGFI) is given. The AGFI is a measure of the relative amount of variance accounted for by the model, corrected for the degrees of freedom in the model relative to the number of variables. The GFI and AGFI can be classified as absolute indexes of fit because they basically compare the hypothesised model with no model at all (Hu & Bentler, 1995). Although both indexes range from zero to 1,00, the distribution of the AGFI is unknown, therefore no statistical test or critical value is available (Jöreskog & Sörborn, 1986). The parsimony goodness-of-fit index (PGFI) addresses the issue of parsimony in SEM (Mulaik et al., 1989). The PGFI takes into account the complexity (i.e., number of estimated parameters) of the hypothesised model in the assessment of overall model fit and provides a more realistic evaluation of the hypothesised model. Mulaik et al. (1989) suggest that although indexes in the 0,90s accompanied by PGFI's in the 0,50s are not unexpected, however, values > 0,80 are considered to be more appropriate (Byrne, 2001).

The Normed Fit Index (NFI) is used to assess global model fit. The NFI represents the point at which the model being evaluated falls on a scale running from a null model to perfect fit. This index is normed to fall on a 0 to 1 continuum. Marsh, Balla and Hau (1996) suggest that

this index is relatively insensitive to sample sizes. The Comparative Fit Index (CFI) represents the class of incremental fit indexes in that it is derived from the comparison of a restricted model (i.e., one in which structure is imposed on the data) with that of an independence (or null) model (one in which all correlations among variables are zero) in the determination of goodness-of-fit. The Tucker-Lewis Index (TLI) (Tucker & Lewis, 1973), is a relative measure of covariation. For these fit indexes, it is more or less generally accepted that a value of less than 0,90 indicates that the fit of the model can be improved (Hoyle, 1995), although a revised cut-off value close to 0,95 has recently been advised (Hu & Bentler, 1999).

To overcome the problem of sample size, Browne and Cudeck (1993) suggested using the Root Mean Square Error of Approximation (RMSEA) and the 90% confidence interval of the RMSEA. The RMSEA estimates the overall amount of error; it is a function of the fitting function value relative to the degrees of freedom. The RMSEA point estimate should be 0,05 or less and the upper limit of the confidence interval should not exceed 0,08 (Hu & Bentler (1999) suggested a value of 0,06 to be indicative of good fit between the hypothesised model and the observed data). MacCallum, Browne and Sugawara (1996) recently elaborated on these cut-off points and noted that RMSEA values ranging from 0,08 to 0,10 indicate mediocre fit, and those greater than 0,10 indicate poor fit.

A stepwise multiple regression analysis was conducted for work engagement to determine the percentage of the variance in the dependent variable (work engagement) that is predicted by the independent variables (job stress and coping). The effect size (which indicates practical significance) in the case of multiple regression is given by following formula (Steyn, 1999):

$$f^2 = R^2 / (1 - R^2)$$

A cut-off point of 0,35 (large effect, Steyn, 1999) was set for the practical significance of f^2 .

The multiple correlation coefficient (R), is used to determine the correlations between job stress, coping and the construct of work engagement. The multiple correlation coefficient is one of the links that bind together the various aspects of multiple regression and analysis of variance. R is the highest possible correlation between a least-squares linear composite of the independent variables and the observed dependent variable (Kerlinger & Lee, 2000).

The value of R^2 is used to determine the proportion of the total variance of the dependent variable that is explained by the independent variables. The F -test is used to test if a significant regression exists between the independent and dependent variables. Steyn (1999) suggested that effect size is used together with multiple regression especially when working with a total population (Steyn, 1999). Cohen suggested the following guidelines for effect size:

- $f^2 = 0,01$ – small effect
- $f^2 = 0,10$ – medium effect (Cohen suggested 0,15)
- $f^2 = 0,35$ – large effect

1.4 OVERVIEW OF CHAPTERS

Chapter 2 deals with burnout in the police and the construct validity and internal consistency of the MBI-GS as well as the MBI-GS's construct equivalence and bias for different race groups in the SAPS. Chapter 3 deals with work engagement in the police and the construct validity and internal consistency of the UWES as well as the UWES's construct equivalence and bias for different race groups in the SAPS. In Chapter 4, norms are determined for the MBI-GS and UWES for the South African Police Service and burnout and work engagement levels of various demographic groups are determined. In Chapter 5 a causal model for burnout and work engagement is developed and tested, which includes job stress and coping strategies. A discussion and recommendations follow in Chapter 6.

1.5 CHAPTER SUMMARY

This chapter discussed the problem statement and research objectives. The measuring instruments and research method that are used in this research were explained, followed by a brief overview of the chapters that follow.

CHAPTER 2

RESEARCH ARTICLE 1

THE VALIDATION OF THE MASLACH BURNOUT INVENTORY – GENERAL SURVEY IN THE SOUTH AFRICAN POLICE SERVICE*

K. STORM

S. ROTHMANN

Research Programme "Human Resource Management for Development", Research Unit "Decision-making and Management for Economic Development", PU for CHE

ABSTRACT

The objectives of this research were to validate the Maslach Burnout Inventory – General Survey (MBI-GS) for the South African Police Service (SAPS) and to determine its construct equivalence and bias for different race groups. A cross-sectional survey design was used. Stratified random samples ($N = 2\,396$) were taken of police members of nine provinces in South Africa. The MBI-GS and a biographical questionnaire were administered. Structural equation modelling confirmed a 3-factor model of burnout, consisting of Exhaustion, Cynicism and Professional Efficacy. All three factors showed acceptable internal consistencies. Exploratory factor analysis with target rotations confirmed the construct equivalence of the three factors for different race groups in the SAPS. No evidence was found for uniform or non-uniform bias of the items of the MBI-GS for different race groups.

OPSOMMING

Die doelstellings van hierdie navorsing was om die Maslach Uitbrandingsvraelys - Algemene Opname (MBI-GS) te valideer vir die Suid-Afrikaanse Polisiediens (SAPD) en die konstrukekwivalensie en sydigheid daarvan vir verskillende rasse-groepe te bepaal. 'n Dwaarsdeursnee-ontwerp is gebruik. Gestratifiseerde ewekansige steekproewe ($N = 2\,396$) van polisieledes uit nege provinsies is geneem. Die MBI-GS en 'n biografiese vraelys is afgeneem. Strukturele vergelykingsmodellering het 'n 3-faktormodel van uitbranding bestaande uit Uitputting, Sinisme en Professionele Doeltreffendheid bevestig. Al drie faktore het aanvaarbare interne konsekwenheid getoon. Eksploratiewe faktoranalise met teikenrotasies het die konstrukekwivalensie van die drie faktore vir verskillende rasse-groepe in die SAPD bevestig. Bewyse is nie gevind vir uniforme of nie-uniforme sydigheid van die items van die MBI-GS vir verskillende rasse-groepe nie.

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Police work has been described as one of society's most stressful occupations (Alexander, 1999; Anshel, 2000; Anson, Johnson & Anson, 1997; Paton & Violanti, 1999). Negative aspects of police work such as excessive paperwork, contacts with the public that are sometimes negative and confrontational, shift work, threats of violence and the militaristic nature of the bureaucratic structure of policing are among the job stressors that confront police officers (Greller & Parsons, 1988; Jermier, Gaines & McIntosh, 1989). This is particularly true for South Africa, where the longstanding and continuing socio-economic and political turmoil of the past thirty years is characterised by unprecedented levels of crime and violence (Gulle, Tredoux & Foster, 1998; Marks, 1995; Nel & Burgers, 1996). Tracking and addressing the effectiveness of members of the South African Police Service (SAPS) in areas that could possibly impact on the standard of their services is therefore of great importance. One area that should be researched in this regard is burnout (Maslach & Jackson, 1986).

Burnout is a metaphor that is commonly used to describe a state or process of mental exhaustion (Schaufeli & Enzmann, 1998). Burnout first emerged as a social problem, not as a scholarly construct. Therefore, during the pioneering phase, the initial conception of burnout was shaped by pragmatic rather than academic concerns, the work was exploratory and the goal to articulate the burnout phenomenon (Maslach & Schaufeli, 1993; Maslach, Schaufeli & Leiter, 2001). In the second empirical phase, burnout research became more systematic and quantitative in nature. Larger study samples were used and the focus shifted to the assessment of burnout, utilising questionnaire and survey methodology (Maslach et al., 2001). Furthermore, the concept of burnout that was initially closely linked to the human services where individuals do 'people' work of some kind, has been expanded towards all other professions and occupational groups.

Probably the most frequently cited definition of burnout comes from Maslach and Jackson, (1986, p. 1). They defined burnout as a syndrome of emotional exhaustion, depersonalisation and reduced personal accomplishment that can occur among individuals who do "people work" of some kind. Schaufeli and Enzmann (1998, p. 36) present more of a "working" definition of burnout. They agreed partially with Maslach and Jackson (1986) by also identifying exhaustion as a core indicator of burnout and a sense of reduced effectiveness as an accompanying symptom, but added three additional general symptoms, namely distress (affective, cognitive, physical and behavioural), decreased motivation, and dysfunctional

attitudes and behaviours at work. They define burnout as "a persistent, negative, work-related state of mind in 'normal' individuals that is primarily characterised by exhaustion, which is accompanied by distress, a sense of reduced effectiveness, decreased motivation, and the development of dysfunctional attitudes and behaviours at work".

Research over the past two decades has shown that burnout is not only related to negative outcomes for the individual, including depression, a sense of failure, fatigue and loss of motivation, but also to negative outcomes for the organisation, including absenteeism, turnover rates and lowered productivity (Schaufeli & Enzmann, 1998). These negative outcomes are also applicable to police officers. Statistics regarding continuous exposure to violence, retirement as a result of stress-related psychological disorders and medical reasons as well as the high suicide rate in the SAPS serve as an indication of the growing contention that many police officers experience their working conditions as stressful and traumatic (Kopel & Friedman, 1999). Therefore, it seems important and relevant to investigate the burnout levels of South African police members.

In the light of the above discussion, the lack of empirical research that systematically investigates police burnout in South Africa is a concern. The serious limitations of burnout research in South Africa include poorly designed studies, a lack of sophisticated statistical analyses and poorly controlled studies (Rothmann, 2002). The present study is a first step towards redressing this need and constitutes a preliminary exploration of the area.

It is important to use a reliable and valid instrument to measure burnout. A recent trend in burnout research is the adaptation of the original version of the MBI for use outside the human services. This new version was called the MBI-General Survey (MBI-GS) (Schaufeli, Leiter, Maslach & Jackson, 1996). Thus the concept of burnout and its measurement were broadened to include all employees and not only those who do "people work" (Maslach & Leiter, 1997). However, the MBI-GS has not yet been validated for police officers and little information is available regarding its internal consistency and construct validity (Rothmann, 2002).

South Africa is a multicultural society and the SAPS employs individuals of diverse cultural backgrounds. Within the South African context it cannot be taken for granted that scores

obtained in one culture can be compared across cultural groups. Before comparing scores across cultural groups, equivalence and bias should be tested (Van de Vijver & Leung, 1997). Without a test of equivalence and bias it is impossible to know to what extent scores or constructs underlying an instrument can be compared across cultures.

The objectives of this study were to determine the construct validity and internal consistency of the MBI-GS and to test its construct equivalence and bias for different race groups in the SAPS.

The Maslach Burnout Inventory – General Survey (MBI-GS)

Burnout was originally almost exclusively studied as an occupational issue for people providing human services (Schaufeli & Enzmann, 1998). However, nearly a quarter of a century of research and practice have taught that burnout also exists outside the realm of the human services. Therefore, some researchers used the original version of the MBI, which was developed for the helping professions, for other occupational groups as well. Not surprisingly, they found that the scores for these groups differed from norms established with human service workers. Furthermore, the three factors were not maintained where the Emotional Exhaustion and Depersonalisation subscales tended to combine into one factor (Maslach, Jackson & Leiter, 1997).

The apparent need for an instrument that measures burnout in non-contactual professional contexts was met by the introduction of the Maslach Burnout Inventory – General Survey (Schaufeli et al., 1996). The MBI-GS assesses parallel dimensions to those contained in the original MBI, except that the items do not explicitly refer to working with people. The MBI-GS comprises three subscales: Exhaustion (Ex), Cynicism (Cy) and Professional Efficacy (PE). Contrary to the MBI-HSS, the exhaustion items of the MBI-GS are generic; they refer to fatigue, but without direct reference to people as the source of those feelings, as in the MBI-emotional exhaustion subscale. Cynicism reflects indifference or a distant attitude towards one's work in general. Unlike previous versions, the MBI-GS items refer to work itself rather than to recipients of one's service or personal relationships at work. Professional efficacy covers a broader scope than personal accomplishment as measured by the MBI-HSS. It encompasses both social and non-social accomplishments at work. Also, a person is not

classified as "burned out" or "not burned out" but rather placed on a continuum from "more" to "less burned out".

The importance of a reliable and valid instrument for the measurement of burnout is evident not only for the purpose of empirical research, but also ultimately for individual assessment. Since the development of the MBI, a large body of empirical literature has indicated that the inventory provides a psychometrically sound tool for measuring burnout and provides strong evidence supporting its reliability and validity.

The MBI-HSS (Maslach & Jackson, 1986) has evidenced relatively high internal consistency (Kalliath, O'Driscoll, Gillespie & Bluedorn, 2000; Schaufeli & Van Dierendonck, 1995). However, one psychometric characteristic that remains open to debate is the precise nature of the factor structure of the MBI-HSS. The factorial validity representing three factors is not completely beyond question, as there have been studies reporting fewer or more factors. However, the basic three-factor structure underlying the burnout syndrome has been repeatedly confirmed by exploratory and confirmatory factor analyses (Boles, Dean, Ricks, Short & Wang, 2000; Gorter, Albrecht, Hoogstraten & Eijkman, 1999; Schaufeli, Bakker, Hoogduin, Schaap & Kladler, 2001).

Regarding the MBI-GS, internal consistencies are equally satisfactory, ranging from 0,73 (Cynicism) to 0,91 (Exhaustion) (Leiter & Schaufeli, 1996). Reliability analyses done by Schutte, Toppinen, Kalimo and Schaufeli (2000) showed that the Exhaustion and Professional Efficacy subscales were sufficiently internally consistent, but that one Cynicism item should be removed in order to increase the internal consistency beyond the criterion of 0,70. According to them, this might be caused by the ambivalence of the particular item: "I just want to do my job and not be bothered". In their studies, Schaufeli, Leiter and Kalimo (1995) and Leiter and Schaufeli (1996) also found that this item had the lowest factor loadings of the three subscales.

Three studies that used the MBI-GS in South African samples were found. In a sample of senior managers in a manufacturing industry, Rothmann and Jansen van Vuuren (in press) found satisfactory alpha coefficients: Exhaustion = 0,79; Cynicism = 0,84 (after item 13 had been omitted); Professional Efficacy = 0,84. Malan and Rothmann (in press) found higher

alphas (Exhaustion = 0,89; Cynicism = 0,76; Professional Efficacy = 0,85) while Rothmann, Jackson, Kruger and Veldman (in press) found lower alphas for Cynicism (0,72 after item 13 had been omitted) and Professional Efficacy (0,69). Taking this into account, it is expected that the MBI-GS will be sufficiently internally consistent.

A large body of research has addressed the factor structure of the MBI-HSS (Maslach & Jackson, 1986), but it seems as if there is a paucity of research on the internal and external validity of the MBI-GS (Taris, Schreurs & Schaufeli, 1999). Confirmatory factor analysis done by Schutte et al. (2000) showed that the three-factor model was clearly superior to alternative one-factor and two-factor models. Schaufeli, Salanova, González-Romá and Bakker (2002) confirmed these findings. Leiter and Schaufeli (1996) employed confirmatory factor analysis using linear structural equation modelling and also confirmed a three-factor structure. Similar results were obtained by Taris et al. (1999). However, in a sample of Spanish workers who used computer-aided technologies at their jobs, Salanova and Schaufeli (2000) found a four-factor model of burnout where the Efficacy subscale split into two factors that were labelled "goal attainment" and "self-confidence". According to the authors, this divergent result might have been caused by translation problems or by the specific sample being studied. It seems reasonable to expect that a three-factor structure will be obtained in this study. Confirmatory factor analyses by Rothmann and Jansen van Vuuren (in press), Malan and Rothmann (in press) and Rothmann et al. (in press) consistently showed low loadings of item 13 on Cynicism.

The three dimensions of the MBI-GS are interrelated: Cynicism is highly related to Exhaustion ($0,44 < r < 0,61$), and also strongly related to Professional Efficacy ($-0,38 < r < -0,57$) (Schaufeli et al., 1996). Taking into consideration the above, it appears that burnout can validly be measured across a range of different occupations, despite the differences between human service occupations and non-contactual professions. According to Taris et al. (1999), the strong resemblance between the two versions of the MBI ensures maximum comparability and generalisability of results obtained for one occupational group to another.

When burnout measures are applied to different cultural groups (especially when burnout levels for different cultural groups are compared), issues of measurement equivalence and bias become important (Van de Vijver & Tanzer, 1997). According to Van de Vijver and

Leung (1997), equivalence and bias of measuring instruments' should be computed in each study that takes place in a multicultural or cross-cultural context.

Van de Vijver and Leung (1997) make a hierarchical distinction of three types of equivalence. The first type, namely construct equivalence, indicates the extent to which the same construct is measured across all cultural groups studied. When an instrument measures different constructs in different cultures, i.e. when cultural equivalence exists, no comparison can be made. The same construct is measured in the case of construct equivalence (also labelled structural equivalence). The second type of equivalence is called measurement unit equivalence and can be obtained when two metric measures have the same measurement unit but have different origins. The third type of equivalence is called scalar equivalence and can be obtained when two metric measures have the same measurement unit and the same origin. Equivalence cannot be assumed but should be established and reported in each study (Van de Vijver & Leung, 1997). Construct equivalence is the most frequently studied type of equivalence. Although no studies of construct equivalence of the MBI-GS in South Africa were found, it is expected that its construct equivalence will be acceptable.

Item bias should also be computed. An item is an unbiased measure of a theoretical construct, for example burnout, if persons from different cultural groups who are equally burned out have the same average score on the item (Van de Vijver & Leung, 1997). Persons with an equal standing on the theoretical construct underlying the instrument should have the same expected score on the item, irrespective of group membership. The definition of bias does not stipulate that the averages of cultural groups should be identical, but only that these averages should be identical across cultural groups for persons who are equally burned out.

Item bias can be produced by sources such as incidental differences in appropriateness of the item content and inadequate item formulation. Bias will lower the equivalence of a measuring instrument. Two types of item bias are distinguished, namely uniform bias and nonuniform bias (Van de Vijver & Leung, 1997). Uniform bias refers to influences of bias on scores that are more or less the same for all score levels. Nonuniform bias refers to influences that are not identical for all score levels.

The above discussion leads to the following hypotheses:

- H1: Burnout, as measured by the MBI-GS is a three dimensional construct and the MBI-GS shows high internal consistency.
- H2: Burnout is an equivalent and unbiased construct for White, Black, Coloured and Indian police members.

METHOD

Research design

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

Study population

Random samples ($N = 2\ 396$) were taken from police stations in the Limpopo Province, Gauteng, Free State, Mpumalanga, Northern Cape, Western Cape, Eastern Cape, KwaZulu-Natal and North-West Province. The following formula proposed by Kerlinger and Lee (2000) was used to determine the sample size for this study:

$$n' = \frac{n}{1 + \frac{n}{N}}$$

and

$$n = z^2 \times \frac{SD^2}{d^2}$$

where n' = estimated sample size; n = the estimated sample size using the formula; N = the size of the population; z = standard score corresponding to the specified probability of risk; SD = the standard deviation of the population; and d = the specified deviation.

The values for z , SD and d were been determined, based on previous studies of burnout in South Africa (Storm & Rothmann, in press). Stations were divided into small (fewer than 25

staff members), medium (25 – 100 staff members) and large (more than 100 staff members) stations. All police members at randomly identified small and medium stations in each of the provinces were asked to complete the questionnaire. In the large stations stratified random samples were taken according to sex and race. Table 1 presents some of the characteristics of the participants.

Table 1

Characteristics of the Participants

Item	Category	Percentage
Race	White	41,23
	Black	40,97
	Coloured	13,38
	Indian	3,64
Rank	Constable	7,54
	Sergeant	19,16
	Captain	23,33
	Inspector	43,73
	Senior Superintendent	3,06
	Other	3,20
Province	North West Province	15,86
	Gauteng	9,77
	Mpumalanga	7,30
	Limpopo Province	8,01
	KwaZulu-Natal	10,73
	Free State	13,86
	Eastern Cape	11,64
	Northern Cape	8,89
	Western Cape	13,94
Size of station	Small	31,45
	Medium	39,05
	Large	29,51
Education	Grade 10	11,01
	Grade 11	5,18
	Grade 12	55,98
	Technical college diploma	2,86
	Technikon diploma	20,70
	University degree	2,16
	Postgraduate degree	2,11
Gender	Male	77,08
	Female	22,92
Marital status	Single	19,56
	Married	53,06
	Divorced	23,97
	Separated	2,11
	Remarried	1,30

The sample was mostly male (77,08%), married, and had a high school education. The mean age of participants was 34,53 years, while the mean length of work experience was 12,96 years.

Measuring battery

The Maslach Burnout Inventory- General Survey (MBI-GS) (Schaufeli et al., 1996) was used in this study. Furthermore, information was gathered regarding race, language and rank.

The *Maslach Burnout Inventory – General Survey (MBI-GS)* (Schaufeli et al., 1996) measures respondents' relationships with their work on a continuum from engagement to burnout. The MBI-GS has three subscales: Exhaustion (Ex) (five items; e.g. "I feel used up at the end of the workday"), Cynicism (Cy) (five items; e.g. "I have become less enthusiastic about my work") and Professional Efficacy (PE) (six items; e.g. "In my opinion, I am good at my job"). Together the subscales of the MBI-GS provide a three-dimensional perspective on burnout. Internal consistencies (Cronbach coefficient alphas) reported by Schaufeli et al. (1996) varied from 0,87 to 0,89 for Exhaustion, 0,73 to 0,84 for Cynicism and 0,76 to 0,84 for Professional Efficacy. Test-retest reliabilities after one year were 0,65 (Exhaustion), 0,60 (Cynicism) and 0,67 (Professional Efficacy) (Schaufeli et al., 1996). All items are scored on a 7-point frequency rating scale ranging from 0 ("never") to 6 ("daily"). High scores on Ex and Cy, and low scores on PE are indicative for burnout.

Statistical analysis

The statistical analysis was carried out with the help of the SAS-program (SAS Institute, 2000). Cronbach alpha coefficients, inter-item correlation coefficients and factor analysis were used to assess the reliability and validity of the MBI-GS (Clark & Watson, 1995). Descriptive statistics (e.g. means, standard deviations, skewness and kurtosis) were used to analyse the data.

Principal factor extraction with varimax rotation was performed through SAS FACTOR on 16 items from the MBI-GS for the sample of police officers. Principal component extraction

was used prior to principal factor extraction to estimate the number of factors, presence of outliers and factorability of the correlation matrices.

Construct (structural) equivalence was used to compare the factor structures of the MBI-GS for different cultural groups included in the study. Exploratory factor analysis and target (Procrustean) rotation were used to determine construct equivalence (Van de Vijver & Leung, 1997). According to Van de Vijver and Leung (1997), it is not acceptable to conduct factor analyses for different cultural groups to address the similarity of factor-analytic solutions because the spatial orientation of factors in factor analysis is arbitrary. Rather, prior to an evaluation of the agreement of factors in different cultural groups, the matrices of loadings should be rotated with regard to each other (i.e., target rotations should be carried out). The factor loadings of separate groups are rotated to a joint common matrix of factor loadings. After target rotation had been carried out, factorial agreement was estimated using Tucker's coefficient of agreement (Tucker's phi). This coefficient is insensitive to multiplications of the factor loadings, but sensitive to a constant added to all loadings of a factor. The following formula is used to compute Tucker's phi:

$$p_{xy} = \frac{\sum x_i y_i}{\sqrt{\sum x_i^2 y_i^2}}$$

This index does not have a known sampling distribution, hence it is impossible to establish confidence intervals. Values higher than 0,95 are seen as evidence for factorial similarity, whereas values lower as 0,85 are taken to point to non-negligible incongruities (Van de Vijver & Leung, 1997). This index is sufficiently accurate to examine factorial similarity at a global level. However, if construct equivalence is not acceptable, bias analyses should be carried out to detect inappropriate items.

An extension of Cleary and Hilton's (1968) use of analysis of variance was applied to identify item bias (Van de Vijver & Leung, 1997). Bias was examined for each item separately. The item score was the dependent variable, while race groups (four levels) and score levels were the independent variables. Score groups were composed on the basis of the total score on the MBI-GS. A total of ten score levels were obtained by making use of percentiles identified through SAS UNIVARIATE. This made it possible to use score groups with at least 50 persons each. Two effects were tested through analysis of variance, namely

the main effect of culture and the interaction of score level and culture. When both the main effect of culture and the interaction of score level and culture are non-significant, the item is taken to be unbiased.

Structural equation modelling (SEM) methods as implemented by AMOS (Arbuckle, 1997) were used to test the factorial model for the MBI-GS, using the maximum likelihood method. SEM is a statistical methodology that takes a confirmatory (i.e. hypothesis-testing) approach to the analysis of a structural theory bearing on some phenomenon (Byrne, 2001). Several aspects of SEM set it apart from the older generation of multivariate procedures (Byrne, 2001). Firstly, it takes a confirmatory rather than an exploratory approach to data analysis. Furthermore, by demanding that the pattern of inter-variable relations be specified a priori, SEM lends itself well to the analysis of data for inferential purposes. Secondly, although traditional multivariate procedures are incapable of either assessing or correcting for measurement error, SEM provides precise estimates of these error variance parameters. Thirdly, SEM procedures can incorporate both unobserved (latent) and observed variables.

Hypothesised relationships are tested empirically for goodness of fit with the sample data. The χ^2 statistic and several other goodness-of-fit indices summarise the degree of correspondence between the implied and observed covariance matrices. Jöreskog and Sörbom (1993) suggest that the χ^2 value may be considered more appropriately as a badness-of-fit rather than as a goodness-of-fit measure in the sense that a small χ^2 value is indicative of good fit. However, because the χ^2 statistic equals $(N - 1)F_{\min}$, this value tends to be substantial when the model does not hold and the sample size is large (Byrne, 2001). A large χ^2 relative to the degrees of freedom indicates a need to modify the model to fit the data better. Researchers have addressed the χ^2 limitations by developing goodness-of-fit indexes that take a more pragmatic approach to the evaluation process. One of the first fit statistics to address this problem was the χ^2 /degrees of freedom ratio (CMIN/DF) (Wheaton, Muthén, Alwin & Summers, 1977). These criteria, commonly referred to as "subjective" or "practical" indexes of fit, are typically used as adjuncts to the χ^2 statistic.

The Goodness of Fit Index (GFI) indicates the relative amount of the variances/co-variances in the sample predicted by the estimates of the population. It usually varies between 0 and 1 and a result of 0,90 or above indicates a good model fit. In addition, the Adjusted Goodness-

of-Fit Index (AGFI) is given. The AGFI is a measure of the relative amount of variance accounted for by the model, corrected for the degrees of freedom in the model relative to the number of variables. The GFI and AGFI can be classified as absolute indexes of fit because they basically compare the hypothesised model with no model at all (Hu & Bentler, 1995). Although both indexes range from zero to 1,00, the distribution of the AGFI is unknown, therefore no statistical test or critical value is available (Jöreskog & Sörborn, 1986). The parsimony goodness-of-fit index (PGFI) addresses the issue of parsimony in SEM (Mulaik et al., 1989). The PGFI takes into account the complexity (i.e., number of estimated parameters) of the hypothesised model in the assessment of overall model fit and provides a more realistic evaluation of the hypothesised model. Mulaik et al. (1989) suggested that indices in the 0,90's accompanied by PGFIs in the 0,50's are not unexpected, however, values > 0,80 are considered to be more appropriate (Byrne, 2001).

The Normed Fit Index (NFI) is used to assess global model fit. The NFI represents the point at which the model being evaluated falls on a scale running from a null model to perfect fit. This index is normed to fall on a 0 to 1 continuum. Marsh, Balla and Hau (1996) suggest that this index is relatively insensitive to sample sizes. The Comparative Fit Index (CFI) represents the class of incremental fit indices in that it is derived from the comparison of a restricted model (i.e., one in which structure is imposed on the data) with that of an independence (or null) model (i.e., one in which all correlations among variables are zero) in the determination of goodness-of-fit. The Tucker-Lewis Index (TLI) (Tucker & Lewis, 1973), is a relative measure of covariation explained by the model that is specifically developed to assess factor models. For these fit indices (NFI, CFI and TLI), it is more or less generally accepted that a value of less than 0,90 indicates that the fit of the model can be improved (Hoyle, 1995), although a revised cut-off value close to 0,95 has recently been advised (Hu & Bentler, 1999).

To overcome the problem of sample size, Browne and Cudeck (1993) suggested using the Root Mean Square Error of Approximation (RMSEA) and the 90% confidence interval of the RMSEA. The RMSEA estimates the overall amount of error; it is a function of the fitting function value relative to the degrees of freedom. The RMSEA point estimate should be 0,05 or less and the upper limit of the confidence interval should not exceed 0,08. Hu & Bentler (1999) suggested a value of 0,06 to be indicative of good fit between the hypothesised model

and the observed data. MacCallum, Browne, and Sugawara, (1996) recently elaborated on these cut-off points and noted that RMSEA values ranging from 0,08 to 0,10 indicate mediocre fit, and those greater than 0,10 indicate poor fit.

RESULTS

Principal components extraction through SAS FACTOR was used in an initial run to estimate the number of factors of the MBI-GS. Three factors with eigenvalues larger than one were obtained, and the scree plot also showed a sharp break after the third factor. Based on these results, three factors were extracted. A principle components analysis with a varimax rotation was performed on the 16 MBI items. The results of the factor analysis for the MBI-GS are presented in Table 2. Loadings of variables on factors, communalities and percent of variance and covariance are shown in Table 2. Variables are ordered and grouped by size of loading to facilitate interpretation. Loadings under 0,45 (20% of variance) are replaced by zeros. Labels are suggested for each factor in a footnote.

Table 2

Factor Loadings, Communalities (h^2), Percentage Variance and Covariance for Principal Factors Extraction and Varimax Rotation on MBI-GS Items

Item	Description	F ₁ ^a	F ₂	F ₃	h^2
6	Feel burned out	0,75	0,00	0,00	0,65
2	Feel used up	0,74	0,00	0,00	0,58
3	Tired in the morning	0,73	0,00	0,00	0,60
1	Emotionally drained	0,71	0,00	0,00	0,58
4	Working all day is a strain	0,68	0,00	0,00	0,56
10	Good at the job	0,00	0,72	0,00	0,55
16	Feel confident	0,00	0,67	0,00	0,46
7	Making an effective contribution	0,00	0,65	0,00	0,44
12	Accomplished worthwhile things	0,00	0,64	0,00	0,42
5	Effectively solve problems	0,00	0,58	0,00	0,34
11	Exhilarated with accomplishment	0,00	0,51	0,00	0,27
9	Less enthusiastic	0,00	0,00	0,63	0,60
8	Less interested in work	0,00	0,00	0,61	0,59
15	Doubt significance	0,00	0,00	0,61	0,47
14	Cynical about contribution	0,00	0,00	0,56	0,37
Squared Multiple Correlation (SMC)		0,81	0,82	0,67	
Percentage variance		21,15	17,17	12,49	
Percentage covariance		41,63	33,80	24,58	

^aFactor labels:

F₁ Exhaustion
 F₂ Professional Efficacy
 F₃ Cynicism

Inspection of Table 2 shows that three factors were extracted. As indicated by the SMCs, all factors were internally consistent and well defined by the variables. The reverse is also true; variables were well defined by this factor solution. Communality values, as seen in Table 2, tended to be moderate to high, with the exception of one item, Item 13. With a cut of 0,45 for inclusion of a variable in interpretation of a factor, 15 of the 16 variables did load on the three factors. None of the variables in the solution was complex.

When oblique rotation was requested, factors interpreted as Exhaustion and Cynicism correlated 0,45. However, because the correlation was limited to one pair of factors, and because remaining correlations were low, orthogonal rotation was chosen.

Next, structural equation modelling (SEM) methods as implemented by AMOS (Arbuckle, 1997) were used to test the factorial model for the MBI-GS. Before performing SEM, the frequency distribution of the items of the MBI-GS was checked in order to assess deviations from normality and multivariate outliers were removed. It was assumed that the χ^2 goodness-of-fit statistics are not likely to be inflated if the skewness and kurtosis for individual items do not exceed the critical values of 2,00 and 7,00, respectively (West, Finch & Curran, 1995).

Data analyses proceeded as follows: First, a quick overview of model fit was done by looking at the overall χ^2 value, together with its degrees of freedom and probability value. Global assessments of model fit were based on several goodness-of-fit statistics (GFI, AGFI, PGFI, NFI, TLI, CFI and RMSEA); secondly, given findings of an ill-fitting initially hypothesised model, analyses proceeded in an exploratory mode. Possible misspecifications as suggested by the so-called modification indices were looked for, and eventually a revised, re-specified model was fitted to the data.

Hypothesised model

Prior to testing the 3-factor model of burnout, a 1-factor model was tested. However, a statistically significant χ^2 value of 6 010,40 (df = 104; $p = 0,00$) revealed a very poor overall fit. All other indices indicated an extremely poor fit between a hypothesised 1-factor model and the data.

Following the above-mentioned procedure, the full hypothesised 3-factor model consisting of all 16 items was tested (see Figure 1). Table 3 presents fit statistics for the test of the original model.

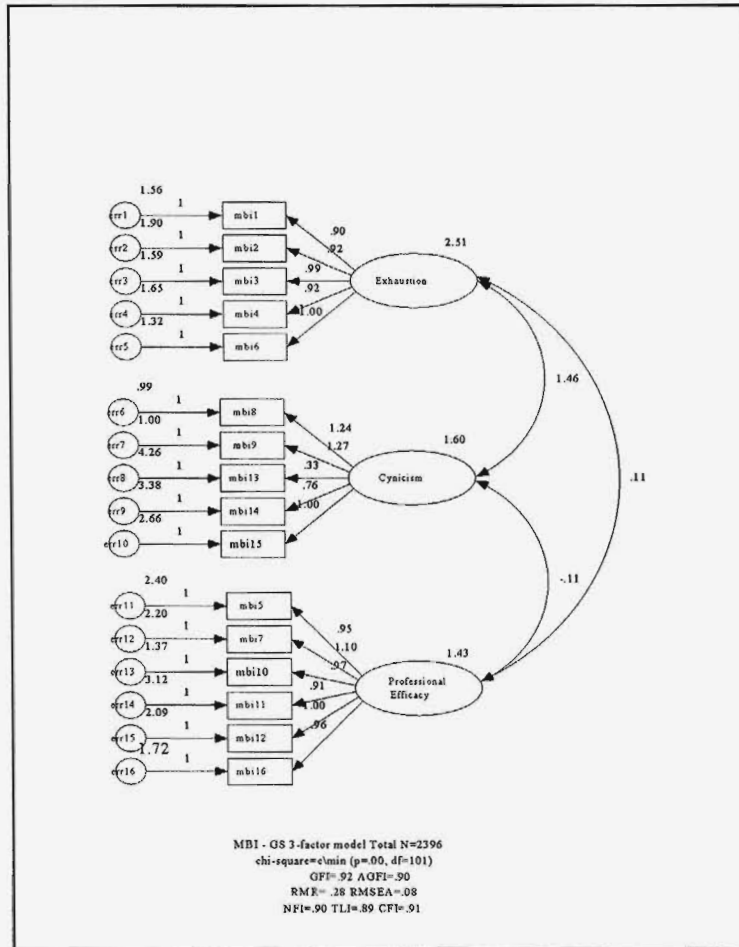


Figure 1. The hypothesised 16-item 3-factor MBI-GS model

Table 3
Goodness-of-Fit Statistics for the Hypothesised MBI-GS Model

Model	χ^2	χ^2/df	GFI	AGFI	PGFI	NFI	TLI	CFI	RMSEA
Default model	1 478,04	14,63	0,92	0,90	0,69	0,90	0,89	0,91	0,08

The statistically significant χ^2 value of 1 478,04 (df = 101; $p = 0,00$) revealed a poor overall fit of the originally hypothesised MBI model. However, both the sensitivity of the likelihood ration test to sample size and its basis on the central χ^2 distribution, which assumes that the model fits perfectly in the population, have been reported to lead to problems of fit. Jöreskog and Sörborn (1993) pointed out that the use of χ^2 is based on the assumption that the model

holds exactly in the population, which is a stringent assumption. A consequence of this assumption is that models that hold approximately in the population will be rejected in a large sample. Furthermore, the hypothesised model (Model 1) was also not that good from a practical perspective. The PGFI value lower than 0,80, NFI, TLI and CFI values lower than 0,95 and RMSEA value higher than 0,05 are indicative of failure to confirm the hypothesised model. Thus it is apparent that some modification in specification is needed in order to determine a model that better represents the sample data. To pinpoint possible areas of misfit, modification indexes were examined. Looking at the regression weights, one parameter, which represents the cross-loading of Item 13 on the Efficacy factor, stood apart from the rest and accounts for substantial misspecification of the hypothesised factor loading. This might be caused by the ambivalence of the particular item.

Post hoc analyses

Given rejection of the initially postulated model, the focus shifted from model test to model development (exploratory factor analysis). Considering the high cross-loading of Item 13, it was decided to re-specify the model with this item deleted. All subsequent analyses are now based on the 15-item revision, which is labelled here as Model 2. The fit statistics are presented in Table 4.

Table 4

Goodness-of-Fit Statistics for Model 2

Model	χ^2	χ^2/df	GFI	AGFI	PGFI	NFI	TLI	CFI	RMSEA
Default model	901,46	10,36	0,95	0,93	0,69	0,94	0,93	0,94	0,06

Although the various fit indexes for this model are substantially improved compared to those for the initial model, there is still some evidence of misfit in the model. For example, the χ^2 (df = 87; $p = 0,00$), PGFI and RMSEA values are only marginally adequate. Modification indexes (MI) were considered to pinpoint areas of misspecification in the model. The constrained parameters exhibiting the highest degree of misfit lay in the error covariance matrix and represent a correlated error between Item 1 and Item 2 (MI = 116,37) as well as between Item 9 and Item 10 (MI = 142,42). Compared with MI values for all other error

covariance parameters, these values are exceptionally high and clearly in need of re-specification. Based on the modification indices and on theoretical considerations, Model 2 was re-specified, with these parameters freely estimated. Following Byrne (2001), errors of two item pairs (i.e. EX1 - EX2; CY9-CY10) were allowed to correlate.

The third model of the MBI-GS structure is shown in Figure 2. In summary, this model was based on 15 of the original 16 items and included a correlated error between Item 1 and Item 2 and between Item 9 and Item 10. In reviewing results bearing on the analysis of this model, Table 5 summarises the goodness-of-fit statistics.

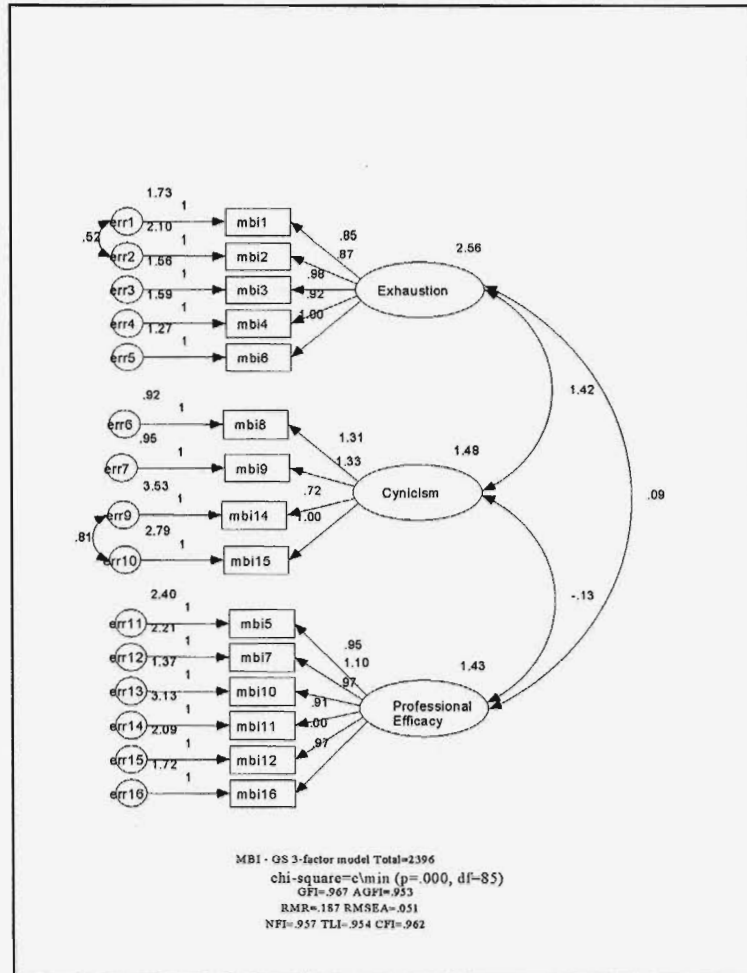


Figure 2. The third model of the 15-item 3-factor MBI-GS model

Table 5

Goodness-of-Fit Statistics for Model 2

Model	χ^2	χ^2/df	GFI	AGFI	PGFI	NFI	TLI	CFI	RMSEA
Default model	620,53	7,30	0,97	0,95	0,69	0,96	0,95	0,96	0,05

The fit statistics in Table 5 indicate a good fit for the re-specified model. Although the χ^2 value ($df = 85; p = 0,00$) is still high, it is considerably lower than in Model 1. All the other fit statistics indicate excellent fit of the measurement model to the data. Since this model fit was satisfactory and the results agreed with the theoretical assumptions underlying the structure of the MBI-GS, no further modifications of the model were deemed necessary. The correlations between the three burnout dimensions are as follows: EX and CY show the

highest correlation of 0,73, followed by EX and PE with a correlation of 0,05, and CY and PE with a correlation of -0,09, respectively.

The descriptive statistics, alpha coefficients and inter-item correlations of the three factors of the MBI-GS are given in Table 6.

Table 6

Descriptive Statistics, Alpha Coefficients And Inter-Item Correlations of the MBI-GS

Item	Mean	SD	Skewness	Kurtosis	$r(\text{Mean})$	α
EX	11,41	8,02	0,48	-0,64	0,58	0,88
CY	8,04	6,13	0,64	-0,29	0,48	0,78
PE	26,67	7,92	-1,09	0,97	0,40	0,79

The scores on the three factors of the MBI-GS are normally distributed. The Cronbach alpha coefficients of the scales are considered to be acceptable compared to the guideline of $\alpha > 0,70$ (Nunnally & Bernstein, 1994). Furthermore, the inter-item correlations are considered acceptable compared to the guideline of $0,15 < r < 0,50$ (Clark & Watson, 1995). It appears that the scales have acceptable levels of internal consistency.

These results provide support for Hypotheses 1.

Next, exploratory factor analysis and target (Procrustean) rotation were used to determine construct equivalence of the MBI-GS. The factor loadings of race groups were rotated to one target group. After target rotation had been carried out, factorial agreement was estimated using Tucker's coefficient of agreement (Tucker's phi). The Tucker's phi-coefficients for the four race groups are given in Table 7.

Table 7

Construct Equivalence of the MBI-GS for Different Race Groups

Group	<i>N</i>	Percentage	Tucker's phi – Exhaustion	Tucker's phi - Cynicism	Tucker's phi – Professional Efficacy
White	952	41,55	0,99	0,99	0,99
Black	946	41,29	0,99	0,99	0,99
Coloured	309	13,49	0,99	0,99	0,99
Indian	84	3,67	0,99	0,99	0,99

Inspection of Table 7 shows that the Tucker's phi coefficients for White, Black, Coloured and Indian police members were all acceptable ($>0,95$). Therefore, it can be deduced that the three factors of the MBI-GS were equivalent for the four race groups.

The results of the item bias analyses that were carried out through analysis of variance for the 15 items of the adapted MBI-GS are reported in Table 8.

Table 8

Item Bias Analyses of the MBI-GS

Item	Tot_SS	Df_g	SS_g	F_g	Eta square	Df_i	SS_i	F_i	Eta square
Exhaustion									
MBI1	5177,70	3	2,60	0,70	0,00	27	41,90	1,20	0,01
MBI2	5584,90	3	2,20	0,50	0,00	27	29,80	0,80	0,01
MBI3	5567,00	3	12,00	3,00	0,00	27	19,80	0,50	0,00
MBI4	5691,70	3	76,50	19,10	0,01	27	63,60	1,80	0,01
MBI6	5307,20	3	20,80	6,00	0,00	27	47,10	1,50	0,01
Cynicism									
MBI8	5095,50	3	45,90	14,30	0,01	24	52,80	2,10	0,01
MBI9	5090,00	3	7,70	2,20	0,00	24	33,30	1,20	0,01
MBI14	6787,30	3	156,80	30,10	0,02	24	199,00	4,80	0,03
MBI15	6701,80	3	26,10	5,30	0,00	24	100,00	2,50	0,02
Professional Efficacy									
MBI5	5900,30	3	37,00	6,00	0,01	27	70,50	1,30	0,01
MBI7	5463,50	3	29,90	5,60	0,01	27	104,10	2,20	0,02
MBI10	3892,90	3	20,00	5,10	0,01	27	39,20	1,10	0,01
MBI11	6938,00	3	154,00	22,30	0,02	27	92,10	1,50	0,01
MBI12	5213,50	3	3,00	0,60	0,00	27	47,30	1,00	0,01
MBI16	4717,60	3	42,10	9,20	0,01	27	55,00	1,30	0,01

Table 8 shows no significant eta square values for the MBI-GS. Therefore, it seems that the means of the race groups for the different score levels do not differ from zero in a systematic way. It is clear that the MBI-GS shows no uniform or non-uniform bias for different race groups in the SAPS. These results provide support for Hypotheses 2.

DISCUSSION

Firstly, the psychometric properties of the MBI-GS were tested. Reliability analyses revealed that all three subscales were sufficiently internally consistent. The results obtained using the structural equation modelling approach supported a three-dimensional factor structure, as has been consistently found across various samples, occupational groups and countries (Leiter & Schaufeli, 1996; Schaufeli et al., 2002; Schutte et al., 2000; Taris et al., 1999).

Observed correlations found between the MBI-GS scales were not within the range of the American test manual (Schaufeli et al., 1996, p. 24). The correlations between exhaustion and

cynicism showed the highest correlation of 0,73. In the test manual the correlation between these two scales ranged from 0,44 to 0,61. Exhaustion and professional efficacy correlated with 0,05, while Maslach et al. (1996) found correlations that ranged from $-0,04$ to $-0,34$. A correlation of $-0,09$ was found between cynicism and professional efficacy, while in the test-manual correlations that ranged from $-0,38$ to $-0,57$ were found.

Based on both conceptual and empirical grounds, item 13 ("I just want to do my job and not be bothered") was eliminated from the original MBI-GS, resulting in a 15-item scale. Schutte et al. (2000) also excluded this item in a cross-national study on the factorial validity of the MBI-GS. According to these authors problems might be caused by the ambivalent nature of this item. On the one hand, a high score may indicate disengagement and social isolation by closing oneself off from contacts with others at work. On the other hand, a higher score may indicate strong motivation and engagement: one concentrates on the task and does not want to be interrupted. Therefore, although the deletion of item 13 was part of the post hoc analyses, and validation is needed in future studies, the decision to eliminate this item is consistent with previous research (Schutte et al., 2000), and should not be regarded as a model specification for the sole purpose of data fitting.

Furthermore, error terms within subscales were also allowed to correlate in order to improve model fit. Correlated error terms in measurement models represent systematic, rather than random, measurement error in item responses. They may derive from characteristics specific either to the items or the respondents (Aish & Jöreskog, 1990). For example, if these parameters reflect item characteristics, they may represent a small omitted factor. However, as may be the case here, correlated errors may represent respondent characteristics that reflect bias such as yea-/nay-saying, social desirability (Aish & Jöreskog, 1990), as well as a high degree of overlap in item content (when an item, although worded differently, essentially asks the same question) (Byrne, 2001).

The results of this study confirm the construct (structural) equivalence of the MBI-GS for White, Black, Coloured and Indian members of the SAPS. Therefore, it can be deduced that the same constructs of burnout were measured in the four groups (Van de Vijver & Leung, 1997). No evidence was found for uniform or non-uniform bias of the items of the MBI-GS for different race groups.

In conclusion, this study could serve as reference for police members regarding burnout levels in the SAPS. The three-factor structure of the burnout construct is largely confirmed and its subscales are internally consistent. Based on the results obtained in this study, it seems as if the MBI-GS is a suitable instrument for measuring burnout of police members in the SAPS. Therefore, the MBI-GS opens up further possibilities for burnout research in South Africa in other non-contactual occupations.

A limitation of this study was that it relied exclusively on self-report measures. This causes a particular problem in validation studies that use self-report measures exclusively because at least part of the common variance of the measures has to be attributed to method variance (Schaufeli et al., 1993).

RECOMMENDATIONS

Based on the results of this study, it is recommended that the MBI-GS be used to assess burnout in the SAPS. However, item 13 should be left out when administering the questionnaire. It appears justifiable to use the MBI-GS to measure burnout in all race groups.

Four suggestions for future research are derived from the present findings. Although this study found the MBI-GS to be reliable and confirmed the three-factor structure, additional research is needed to further determine the reliability and validity in other samples in South Africa. Also, research is needed in other occupations to establish norms for burnout levels other than the SAPS. Future studies should use large samples and adequate statistical techniques (e.g. structural equation modelling). Large sample sizes might provide increased confidence that study findings would be consistent across other similar groups.

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CHAPTER 3

RESEARCH ARTICLE 2

THE VALIDATION OF THE UTRECHT WORK ENGAGEMENT SCALE IN THE SOUTH AFRICAN POLICE SERVICE*

K. STORM

S. ROTHMANN

*Research Programme "Human Resource Management for Development", Research Unit
"Decision-making and Management for Economic Development", PU for CHE*

ABSTRACT

The objectives of this research were to validate the Utrecht Work Engagement Scale (UWES) for the South African Police Service (SAPS) and to determine its construct equivalence and bias in different race groups. A cross-sectional survey design was used. Stratified random samples ($N = 2\,396$) were taken of police members of nine provinces in South Africa. The UWES and a biographical questionnaire were administered. Structural equation modelling confirmed a 3-factor model of work engagement, consisting of Vigour, Dedication and Absorption. These three factors have acceptable internal consistencies. Exploratory factor analysis with target rotations showed equivalence of the three factors for different race groups in the SAPS. No evidence was found for uniform or non-uniform bias of the items of the UWES for different race groups.

OPSOMMING

Die doelstellings van hierdie navorsing was om die Utrecht-werksbegeesteringskaal (UWES) te valideer vir die Suid-Afrikaanse Polisie diens (SAPD) en die konstruekwivalensie daarvan vir verskillende rasse-groepe te bepaal. 'n Dwarsnee-ontwerp is gebruik. Gestratifiseerde ewekansige steekproewe ($N = 2\,396$) is van polisie lede uit nege provinsies geneem. Die UWES en 'n biografiese vraelys is afgeneem. Strukturele vergelykingsmodellering het 'n 3-faktormodel, bestaande uit Energie, Toewyding en Absorpsie, aangetoon. Hierdie drie faktore het aanvaarbare interne konsekwentheid getoon. Eksploratiewe faktoranalise met teikenrotasies het konstruekwivalensie vir die drie faktore vir verskillende rasse-groepe in die SAPD getoon. Bewyse is nie gevind vir uniforme of nie-uniforme sydigheid van die items van die UWES vir verskillende rasse-groepe nie.

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Before the second World War, the field of Psychology had three distinct missions: 1) curing mental illness; 2) making the lives of all people better, more productive and fulfilling; and 3) identifying and nurturing exceptional talent or genius (Seligman & Csikszentmihalyi, 2000). However, after World War II, Psychology became a science that focused largely on healing. Despite its name, research in the Occupational Health Psychology is dramatically weighted on the side of ill-health and unwell-being instead of health and well-being at work. Even the meaning of basic terms are negatively biased – typical usage equates health with the *absence of illness* rather than the *presence of wellness*. Furthermore, the number of articles researching negative aspects outnumbered those dealing with positive aspects by a ratio of 17 to 1 (Diener, Suh, Lucas & Smith, 1999). Myers (2000) arrived at a more favourable ratio of 14 to 1. According to Schaufeli and Bakker (2001), the *Journal of Occupational Health Psychology* published only 6% articles that examined positive aspects of health and well-being. The remaining 94% dealt among others with Repetitive Strain Injury, burnout, violence, discrimination, alcoholism, Post-Traumatic Stress Syndrome, conflict, sleep disorders and negative affect. This almost exclusive attention to pathology neglects the fulfilled individual and the thriving community.

However, there seems to be a more general trend emerging with the recent introduction of the so-called "positive psychology", which shed a new light on the object of Occupational Health Psychology. This positive psychology is seen as an alternative to the predominant focus on pathology and deficits. The aim of this new paradigm is to begin to catalyse a change in the focus of psychology from preoccupation only with repairing the worst things in life to also building positive qualities (Seligman & Csikszentmihalyi, 2000). So the focus of this paradigm is on human strengths and optimal functioning rather than on weaknesses and malfunctioning.

A movement in the direction of positive psychology is also evident in South Africa. The work of Strümpfer (1995, 2002a) focuses on the fortigenic paradigm, which is different from the dominant pathogenic orientations. This paradigm implies a shift from a psychology of the sick and dysfunctional to a positive psychology with respect to challenges and opportunities of people in the work place. Thus, the fortigenic paradigm focuses on the origins of strength. Recent work of Strümpfer (2002b) also focused on the fortigenic paradigm and its relation to burnout. He considered psychological constructs that could help understand alternatives to burnout, as well as helping people to move in the general direction of health. Wissing and

burnout. He considered psychological constructs that could help understand alternatives to burnout, as well as helping people to move in the general direction of health. Wissing and Van Eeden (2002) also focused on positive psychology in their study of psychological well-being. Their study focused on achieving greater empirical clarification of the nature of psychological well-being by investigating the nature of psychological well-being from a fortigenic perspective.

Viewed from this "positive" perspective, it is not surprising that burnout research seems to shift towards its opposite: work engagement. Work engagement is being defined as an energetic state in which the employee is dedicated to excellent performance at work and is confident of his or her effectiveness (Schutte, Toppinen, Kalimo & Schaufeli, 2000). As mentioned above, Occupational Health Psychology focused on the negative effects of work that contributed to burnout. But the question asked is why certain workers can accomplish large amounts of work with enthusiasm and pleasure, without becoming sick or being burned out. Research on work engagement could answer this question.

The concept of engagement is also applicable to police work. Two decades of research in the police stress literature has left little information known about the extent to which policing is stressful. This resulted in relatively little being known about the quality of life among police officers (Hart, Wearing & Headey, 1995). In their attempts to identify the sources of police stress, researchers have focused almost exclusively on the negative aspects of policing (e.g. Band & Manuelle, 1987; Greller, Parsons, & Mitchell, 1992). This resulted in an overall focus of psychological stress in policing and thus an absence of well-being. It is therefore also necessary to study police work in a positive way. This could be done by focusing on the concept of work engagement or the different levels of engagement experienced by police officers.

It is important to use a valid and reliable instrument when work engagement is measured. Schaufeli, Salanova, González-Romá and Bakker (2002) developed the Utrecht Work Engagement Scale (UWES) and found acceptable reliability for it. Two recent studies using confirmative factor analysis demonstrated the factorial validity of the UWES (Schaufeli et al., 2002; Schaufeli, Martinez, Pinto, Salanova, & Bakker in press). However, the UWES has not yet been standardised for police officers in the SAPS and no information is available on its reliability and validity (see Rothmann, 2002). This makes it difficult to assess the levels of

engagement of police officers and to compare the levels of engagement in various demographic groups, as well as to place research results in context. Therefore, it is necessary to validate the UWES for police officers in the SAPS.

South Africa is a multicultural society and the SAPS employs individuals of diverse cultural backgrounds. Within the South African context it cannot be taken for granted that scores obtained in one culture can be compared across cultural groups. Before comparing scores across cultural groups, equivalence and bias should be tested (Van de Vijver & Leung, 1997). Without a test of equivalence and bias it is impossible to know to what extent scores or constructs underlying an instrument can be compared across cultures.

The objectives of this study were to determine the construct validity and internal consistency of the UWES and to test its construct equivalence and bias for different race groups in the SAPS.

Work engagement

Research on the work engagement concept has taken two different but related paths. Maslach and Leiter (1997) rephrased burnout as an erosion of engagement with the job. Work that started out as important, meaningful and challenging, becomes unpleasant, unfulfilling and meaningless. In the view of these authors, work engagement is characterised by energy, involvement and efficacy, which are considered the direct opposites of the three burnout dimensions, namely exhaustion, cynicism and lack of professional efficacy respectively. Therefore, they also assess work engagement by the opposite pattern of scores on the three Maslach Burnout Inventory (MBI) dimensions – low scores on exhaustion and cynicism, and high scores on efficacy are indicative for engagement.

Schaufeli and his colleagues partly agree with Maslach and Leiter's (1997) description, but take a different perspective and define and operationalise work engagement in its own right. Schaufeli et al. (2002) consider burnout and work engagement to be opposite concepts that should be measured independently with different instruments. Furthermore, burnout and work engagement may be considered two prototypes of employee well-being that are part of a more comprehensive taxonomy constituted by the two independent dimensions of pleasure and activation (Watson & Tellegen, 1985). Activation range from exhaustion to vigour, while

identification range from cynicism to dedication. According to this framework, burnout is characterised by a combination of exhaustion (low activation) and cynicism (low identification), whereas engagement is characterised by vigour (high activation) and dedication (high identification).

Based on this theoretical reasoning and after in-depth interviews were carried out with engaged employees, Schaufeli and his colleagues have defined engagement as a positive, fulfilling, work-related state of mind that is characterised by vigour, dedication, and absorption. Rather than a momentary and specific state, work engagement refers to a more persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual or behaviour. Work engagement consists of the following dimensions (Schaufeli et al., 2002):

- **Vigour** is characterised by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, not being easily fatigued, and persistence even in the face of difficulties.
- **Dedication** is characterised by deriving a sense of significance from one's work, by feeling enthusiastic and proud about one's job, and by feeling inspired and challenged by it.
- **Absorption** is characterised by being totally and happily immersed in one's work and having difficulties detaching oneself from it. Time passes quickly and one forgets everything else that is around.

Work engagement is also distinct from other established constructs in organisational psychology, such as organisational commitment, job satisfaction or job involvement (Maslach, Schaufeli & Leiter, 2001). *Organisational commitment* refers to an employee's allegiance to the organisation that provides employment. The focus is on the organisation, where engagement focuses on the work itself. *Job satisfaction* is the extent to which work is a source of need fulfilment and contentment, or a means of freeing employees from hassles or things causing dissatisfaction; it does not encompass the person's relationship with the work itself. *Job involvement* is similar to the involvement aspect of engagement with work, but does not include the energy and effectiveness dimensions (Maslach et al., 2001). Lastly, engagement (especially absorption) comes close to what has been called "*flow*", a term used

by Csikszentmihalyi (1990) that represents a state of optimal experience that is characterised by focused attention, a clear mind and body unison, effortless concentration, complete control, loss of self-consciousness, distortion of time and intrinsic enjoyment. However, flow is a more complex concept that includes many aspects and refers to rather particular, short-term "peak" experiences instead of a more pervasive and persistent state of mind, as is the case with engagement (Schaufeli et al., 1999).

The measurement of work engagement

Regarding the measurement of work engagement, Schaufeli et al. (2002) disagree with Maslach and Leiter (1997), who stated that engagement is adequately measured by the opposite profile of MBI scores. Schaufeli et al. (2002) reason that, by using the MBI for measuring work engagement, it is impossible to study its relationship with burnout empirically since both concepts are considered to be opposite poles of a continuum that is covered by one single instrument (the MBI). Although they agree that work engagement is the positive antithesis of burnout, they acknowledge that the measurement and the structures of both concepts differ.

Schaufeli et al. (2002) developed a self-report questionnaire to assess work engagement (the Utrecht Work Engagement Scale – UWES), which includes items such as: "I am bursting with energy in my work"(vigour); "My job inspires me" (dedication); "I feel happy when I'm engrossed in my work" (absorption).

Regarding the psychometric qualities of the UWES, preliminary results show that the three engagement scales have sufficient internal consistencies (Schaufeli et al., 2002; in press). For samples one (314 undergraduate students) and two (619 employees) respectively, the Cronbach α 's were as follows: Vigour (9 items), $\alpha = 0,68$ and $0,80$; Dedication (8 items), $\alpha = 0,91$ (both samples); Absorption (7 items), $\alpha = 0,73$ and $0,75$. In the student's sample, the value of α could be improved for Vigour when three items were eliminated ($\alpha = 0,78$). The three scales are moderately to strongly related (mean $r = 0,63$ in Sample 1 and mean $r = 0,70$ in Sample 2). Also, the fit of the hypothesised three-factor model to the data is superior to a one-factor solution (Maslach et al., 2001; Schaufeli et al., 2002).

When work engagement measures are applied to different cultural groups (especially when engagement levels for different cultural groups are compared), issues of measurement bias and equivalence become important (Van de Vijver & Tanzer, 1997). According to Van de Vijver and Leung (1997), equivalence and bias of measuring instruments should be computed in each study that takes place in a multicultural or cross-cultural context.

Van de Vijver and Leung (1997) made a hierarchical distinction of three types of equivalence. The first type, namely construct equivalence, indicates the extent to which the same construct is measured across all cultural groups studied. When an instrument measures different constructs in different cultures, i.e. when cultural equivalence exists, no comparison can be made. The same construct is measured in the case of construct equivalence (also labelled structural equivalence). The second type of equivalence is called measurement unit equivalence and can be obtained when two metric measures have the same measurement unit but have different origins. The third type of equivalence is called scalar equivalence and can be obtained when two metric measures have the same measurement unit and the same origin. Equivalence cannot be assumed but should be established and reported in each study (Van de Vijver & Leung, 1997). Construct equivalence is the most frequently studied type of equivalence. Although no studies of construct equivalence of the UWES in South Africa were found, it is expected that its construct equivalence will be acceptable.

If unacceptable construct equivalence is found, item bias should be computed. An item is an unbiased measure of a theoretical construct, for example engagement, if persons from different cultural groups who are equally engaged have the same average score on the item (Van de Vijver & Leung, 1997). Persons with an equal standing on the theoretical construct underlying the instrument should have the same expected score on the item, irrespective of group membership. The definition of bias does not stipulate that the averages of cultural groups should be identical, but only that these averages should be identical across cultural groups for persons who are equally engaged.

Item bias can be produced by sources such as incidental differences in appropriateness of the item content and inadequate item formulation. Bias will lower the equivalence of a measuring instrument. Two types of item bias are distinguished, namely uniform bias and non-uniform bias (Van de Vijver & Leung, 1997). Uniform bias refers to influences of bias on scores that

are more or less the same for all score levels. Non-uniform bias refers to influences that are not identical for all score levels.

The above discussion leads to the following hypotheses:

- H1: Work engagement, as measured by the UWES, is a three dimensional construct and the UWES shows high internal consistency.
- H2: Work engagement is an equivalent and unbiased construct for White, Black, Coloured and Indian police members.

METHOD

Research design

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

Study population

Random samples ($N = 2\ 396$) were taken from police stations in the Limpopo Province, Gauteng, Free State, Mpumalanga, Northern Cape, Western Cape, Eastern Cape, KwaZulu-Natal and North-West Province. The following formula proposed by Kerlinger and Lee (2000) was used to determine the sample size for this study:

$$n' = \frac{n}{1 + \frac{n}{N}}$$

and

$$n = z^2 \times \frac{SD^2}{d^2}$$

where n' = estimated sample size; n = the estimated sample size using the formula; N = the size of the population; z = standard score corresponding to the specified probability of risk;

SD = the standard deviation of the population, and d = the specified deviation. Stations were divided into small (fewer than 25 staff members), medium (25 – 100 staff members) and large (more than 100 staff members) stations. All police members at randomly identified small and medium stations in each of the provinces were asked to complete the questionnaire. In the large stations stratified random samples were taken according to sex and race. Table 1 presents some of the characteristics of the participants.

Table 1

Characteristics of the Participants

Item	Category	Percentage
Race	White	41,23
	Black	40,97
	Coloured	13,38
	Indian	3,64
Rank	Constable	7,54
	Sergeant	19,16
	Captain	23,33
	Inspector	43,73
	Senior Superintendent	3,06
	Other	3,20
Province	North West Province	15,86
	Gauteng	9,77
	Mpumalanga	7,30
	Limpopo Province	8,01
	KwaZulu-Natal	10,73
	Free State	13,86
	Eastern Cape	11,64
	Northern Cape	8,89
	Western Cape	13,94
Size of station	Small	31,45
	Medium	39,05
	Large	29,51
Education	Grade 10	11,01
	Grade 11	5,18
	Grade 12	55,98
	Technical college diploma	2,86
	Technikon diploma	20,70
	University degree	2,16
	Postgraduate degree	2,11
Gender	Male	77,08
	Female	22,92
Marital status	Single	19,56
	Married	53,06
	Divorced	23,97
	Separated	2,11
	Remarried	1,30

The sample was mostly male (77,08%), married, and had a high school education. The mean age of participants was 34,53 years, while the mean length of work experience was 12,96 years.

Measuring battery

The *Utrecht Work Engagement Scale (UWES)* (Schaufeli et al., 2002) was used to measure the levels of engagement. Although work engagement is conceptually seen as the positive antithesis of burnout, it is operationalised in its own right. Work engagement is a concept that includes three dimensions: vigour, dedication and absorption. Engaged workers are characterised by high levels of vigour and dedication, and they are immersed in their jobs. It is an (empirical) question whether engagement and burnout are endpoints of the same continuum or if they are two distinct but related concepts. The UWES is scored on a seven-point frequency rating scale, varying from 0 ("never") to 6 ("always"). The alpha coefficients for the three sub-scales varied between 0,68 and 0,91. The alpha coefficient could be improved (α varies between 0,78 and 0,89 for the three sub-scales) by eliminating a few items without substantially decreasing the scale's internal consistency.

Statistical analysis

The statistical analysis was carried out by means of the SAS program (SAS Institute, 2000). Cronbach alpha coefficients, inter-item correlation coefficients and factor analysis were used to assess the reliability and validity of the UWES (Clark & Watson, 1995). Descriptive statistics (e.g. means, standard deviations, skewness and kurtosis) were used to analyse the data.

Principal factor extraction with varimax rotation was performed through SAS FACTOR on 17 items from the UWES for the sample of police officers. Principal components extraction was used prior to principal factor extraction to estimate the number of factors, the presence of outliers and the factorability of the correlation matrices.

Construct (structural) equivalence was used to compare the factor structures of the UWES for the different cultural groups included in the study. Exploratory factor analysis and target (Procrustean) rotation were used to determine construct equivalence (Van de Vijver & Leung, 1997). According to Van de Vijver and Leung (1997), it is not acceptable to conduct factor analyses for different cultural groups to address the similarity of factor-analytic solutions because the spatial orientation of factors in factor analysis is arbitrary. Rather, prior to an evaluation of the agreement of factors in different cultural groups, the matrices of loadings

should be rotated with regard to each other (i.e., target rotations should be carried out). The factor loadings of separate groups are rotated either to one target group or to a joint common matrix of factor loadings. After target rotation had been carried out, factorial agreement was estimated using Tucker's coefficient of agreement (Tucker's phi). This coefficient is insensitive to multiplications of the factor loadings, but sensitive to a constant added to all loadings of a factor. The following formula is used to compute Tucker's phi:

$$p_{xy} = \frac{\sum x_i y_i}{\sqrt{\sum x_i^2 y_i^2}}$$

This index does not have a known sampling distribution hence it is impossible to establish confidence intervals. Values higher than 0,95 are seen as evidence of factorial similarity, whereas values lower than 0,85 are taken to point to non-negligible incongruities (Van de Vijver & Leung, 1997). This index is sufficiently accurate to examine factorial similarity at a global level. However, if construct equivalence is not acceptable, bias analyses should be carried out to detect inappropriate items.

An extension of Cleary and Hilton's (1968) use of analysis of variance was applied to identify item bias (Van de Vijver & Leung, 1997). Bias was examined for each item separately. The item score was the dependent variable, while race groups (four levels) and score levels were the independent variables. Score groups were composed on the basis of the total score on the UWES. A total of ten score levels were obtained by making use of percentiles identified through SAS UNIVARIATE. This made it possible to use score groups with at least 50 persons each. Two effects were tested through analysis of variance, namely the main effect of culture and the interaction of score level and culture. When both the main effect of culture and the interaction of score level and culture are non-significant, the item is taken to be unbiased.

Structural equation modelling (SEM) methods as implemented by AMOS (Arbuckle, 1997) were used to test the factorial model for the UWES, using the maximum likelihood method. Before performing SEM, the frequency distributions of the UWES were checked for normality and multivariate outliers were removed. However, the data did not have a multivariate normal distribution, one of the critically important assumptions associated with SEM. One approach to handling the presence of multivariate non-normal data is to use a

procedure known as "the bootstrap" (West, Finch, & Curran, 1995; Yung & Bentler, 1996; Zhu, 1997).

Bootstrapping serves as a resampling procedure by which the original sample is considered to represent the population. Multiple subsamples of the same size as the parent sample are then drawn randomly, *with replacement*, from this population and provide the data for empirical investigation of the variability of parameter estimates and indexes of fit (Byrne, 2001). The underlying concept of the bootstrap technique is that it enables one to create multiple subsamples from an original database in order to examine parameter distributions relative to each of these spawned samples, thereby reporting values with a greater degree of accuracy (Byrne, 2001).

SEM is a statistical methodology that takes a confirmatory (i.e. hypothesis-testing) approach to the analysis of a structural theory bearing on some phenomenon (Byrne, 2001). Several aspects of SEM set it apart from the older generation of multivariate procedures (Byrne, 2001). Firstly, it takes a confirmatory rather than an exploratory approach to data analysis. Furthermore, by demanding that the pattern of inter-variable relations be specified, a priori, SEM lends itself well to the analysis of data for inferential purposes. Secondly, although traditional multivariate procedures are incapable of either assessing or correcting for measurement error, SEM provides precise estimates of these error variance parameters. Thirdly, SEM procedures can incorporate both unobserved (latent) and observed variables.

Hypothesised relationships are tested empirically for goodness of fit with the sample data. The χ^2 statistic and several other goodness-of-fit indexes summarise the degree of correspondence between the implied and observed covariance matrixes. Jöreskog and Sörbom (1993) suggest that the χ^2 value may be considered more appropriately as a badness-of-fit, rather than as a goodness-of-fit measure in the sense that a small χ^2 value is indicative of good fit. However, because the χ^2 statistic equals $(N - 1)F_{\min}$, this value tends to be substantial when the model does not hold and the sample size is large (Byrne, 2001). A large χ^2 relative to the degrees of freedom indicates a need to modify the model to better fit the data. Researchers have addressed the χ^2 limitations by developing goodness-of-fit indexes that take a more pragmatic approach to the evaluation process. One of the first fit statistics to address this problem was the $\chi^2/\text{degrees of freedom}$ ratio (CMIN/DF) (Wheaton, Muthén,

Alwin & Summers, 1977). These criteria, commonly referred to as "subjective" or "practical" indexes of fit are typically used as adjuncts to the χ^2 statistic.

The Goodness of Fit Index (GFI) indicates the relative amount of the variances/co-variances in the sample predicted by the estimates of the population. It usually varies between 0 and 1, and a result of 0,90 or above indicates a good model fit. In addition, the Adjusted Goodness-of-Fit Index (AGFI) is given. The AGFI is a measure of the relative amount of variance accounted for by the model, corrected for the degrees of freedom in the model relative to the number of variables. The GFI and AGFI can be classified as absolute indexes of fit because they basically compare the hypothesised model with no model at all (Hu & Bentler, 1995). Although both indexes range from zero to 1,00, the distribution of the AGFI is unknown, therefore no statistical test or critical value is available (Jöreskog & Sörborn, 1986). The parsimony goodness-of-fit index (PGFI) addresses the issue of parsimony in SEM (Mulaik et al., 1989). The PGFI takes into account the complexity (i.e., number of estimated parameters) of the hypothesised model in the assessment of overall model fit and provides a more realistic evaluation of the hypothesised model. Mulaik et al. (1989) suggested that indexes in the 0,90's accompanied by PGFI's in the 0,50's are not unexpected, however, values > 0,80 are considered to be more appropriate (Byrne, 2001).

The Normed Fit Index (NFI) is used to assess global model fit. The NFI represents the point at which the model being evaluated falls on a scale running from a null model to perfect fit. This index is normed to fall on a 0 to 1 continuum. Marsh, Balla and Hau (1996) suggest that this index is relatively insensitive to sample sizes. The Comparative Fit Index (CFI) represents the class of incremental fit indexes in that it is derived from the comparison of a restricted model (i.e., one in which structure is imposed on the data) with that of an independence (or null) model (i.e., one in which all correlations among variables are zero) in the determination of goodness-of-fit. The Tucker-Lewis Index (TLI) (Tucker & Lewis, 1973), which is a relative measure of covariation explained by the model that is specifically developed to assess factor models. For these fit indexes (NFI, CFI and TLI), it is more or less generally accepted that a value of less than 0,90 indicates that the fit of the model can be improved (Hoyle, 1995), although a revised cut-off value close to 0,95 has recently been advised (Hu & Bentler, 1999).

To overcome the problem of sample size, Browne and Cudeck (1993) suggested using the Root Mean Square Error of Approximation (RMSEA) and the 90% confidence interval of the RMSEA. The RMSEA estimates the overall amount of error; it is a function of the fitting function value relative to the degrees of freedom. The RMSEA point estimate should be 0,05 or less and the upper limit of the confidence interval should not exceed 0,08. Hu and Bentler (1999) suggested a value of 0,06 to be indicative of good fit between the hypothesised model and the observed data. MacCallum, Browne, and Sugawara (1996) recently elaborated on these cut-off points and noted that RMSEA values ranging from 0,08 to 0,10 indicate mediocre fit, and those greater than 0,10 indicate poor fit.

RESULTS

Structural equation modelling (SEM) methods as implemented by AMOS (Arbuckle, 1997) were used to test two factorial models for the UWES, a three-factor as well as a one-factor model of work engagement. It was assumed that the χ^2 goodness-of-fit statistics are not likely to be inflated if the skewness and kurtosis for individual items do not exceed the critical values of 2,0 and 7,0, respectively (West et al., 1995). Data-analyses proceeded as follows: First, a quick overview of each model fit was done by looking at the overall χ^2 value, together with its degrees of freedom and probability value. Global assessments of model fit were based on several goodness-of-fit statistics (GFI, AGFI, PGFI, NFI, TLI, CFI and RMSEA). Secondly, given findings of an ill-fitting initially hypothesised model, analyses proceeded in an exploratory mode using both EFA and CFA. Possible misspecifications as suggested by the so-called modification indexes and standardised residuals values were looked for and eventually a revised, re-specified model was fitted to the data.

Hypothesised three-factor model

Following this procedure, the full hypothesised 3-factor model consisting of all 17 items was tested initially. Table 2 presents fit statistics for the test of the original model.

Table 2

Goodness-of-Fit Statistics for the Hypothesised 3-Factor UWES Model

Model	χ^2	χ^2/df	GFI	AGFI	PGFI	NFI	TLI	CFI	RMSEA
Default model	1978,79	17,06	0,90	0,87	0,68	0,92	0,91	0,92	0,08

The SEM analyses showed that the 3-factor solution was not admissible. Furthermore, the statistically significant χ^2 value of 1978,79 (df = 116; $p = 0,00$) revealed a poor overall fit of the originally hypothesised 3-factor UWES model. However, both the sensitivity of the likelihood ratio test to sample size and its basis on the central χ^2 distribution, which assumes that the model fits the population perfectly, have been reported to lead to problems of fit. Jöreskog and Sörbom (1993) pointed out that the use of χ^2 is based on the assumption that the model holds exactly in the population, which is a stringent assumption. A consequence of this assumption is that models that hold approximately in the population will be rejected in a large sample. Furthermore, the hypothesised model (Model 1) was also not that good from a practical perspective. The PGFI value of lower than 0,80, NFI, TLI and CFI values of lower than 0,95 and the RMSEA value of higher than 0,05 are indicative of failure to confirm the hypothesised model. Thus, it is apparent that some modification in specification is needed in order to determine a model that better represents the sample data.

To pinpoint possible areas of misfit, modification indexes were examined. Furthermore, standardised residuals values were examined. Standardised residuals are fitted residuals divided by their asymptotically (large sample) standard errors (Jöreskog & Sörbom, 1988). They are analogous to z scores and are therefore the easier of the two sets of residual values to interpret. In essence, they represent estimates of the number of standard deviations the observed residuals are from the zero residuals that would exist if model fit were perfect (Byrne, 2001). Values $> 2,58$ are considered to be large (Jöreskog & Sörbom, 1988).

Post hoc analyses

Given rejection of the initially postulated 3-factor model, the focus shifted from model test to model development (exploratory factor analysis). Considering the high standardised residuals of two items, it was decided to re-specify the model with Item 4 and Item 14 deleted. Modification indexes (MI) were also considered to pinpoint areas of misspecification in the model. The constrained parameters exhibiting the highest degree of misfit lay in the error covariance matrix and represent a correlated error between Item 8 and Item 9 (MI = 117,10), as well as between Item 15 and Item 16 (MI = 125,23). Compared with MI values for all other error covariance parameters, these values are exceptionally high and clearly in need of re-specification. Based on the modification indexes and on theoretical considerations, Model 1 was re-specified with these parameters freely estimated. Following Byrne (2001), errors of two item pairs (i.e. VI8-AB9; VI15-AB16) were allowed to correlate. All subsequent analyses are now based on the 15-item revision, which is labelled here as Model 2. The fit statistics are presented in Table 3.

Table 3

Goodness-of-Fit Statistics for Model 2 of the 3-factor Structure

Model	χ^2	χ^2/df	GFI	AGFI	PGFI	NFI	TLI	CFI	RMSEA
Default model	1130,28	13,30	0,94	0,91	0,66	0,94	0,93	0,95	0,07

The fit statistics in Table 3 indicate a better fit for the re-specified model. Although the χ^2 value (df = 85; $p = 0,00$) is still high, it is considerably lower than those in Model 1. All the other fit statistics indicate acceptable fit of the measurement model to the data, although the RMSEA value is still a bit high. Since this model fit was satisfactory and the results agreed with the theoretical assumptions underlying the structure of the UWES according to Schaufeli et al. (2002), no further modifications of the model were deemed necessary. The correlations between the three engagement dimensions were high. VI and DE show the highest correlation of 0,97, followed by VI and AB with a correlation of 0,96, and DE and AB with a correlation of 0,90. The re-specified three-factor model is illustrated in Figure 1.

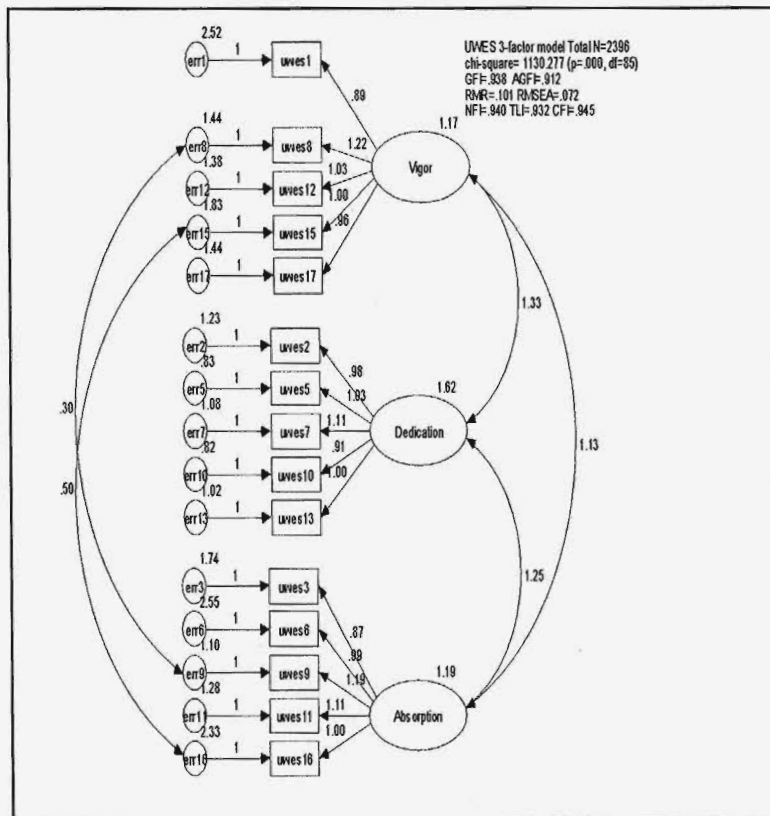


Figure 1. The second model of the 15 item 3-factor UWES model

Following Schaufeli et al. (in press), a unidimensional model was assessed as well. This model assumes that all 17 UWES items load on one single factor. Table 4 presents fit statistics for the test of the original one-factor model.

Table 4

Goodness-of-Fit Statistics for the Hypothesised 1-Factor UWES Model

Model	χ^2	χ^2/df	GFI	AGFI	PGFI	NFI	TLI	CFI	RMSEA
Default model	2250,37	18,91	0,87	0,85	0,68	0,90	0,90	0,91	0,09

The statistically significant χ^2 value of 2250,37 (df = 119; $p = 0,00$) revealed a poor overall fit of the originally hypothesised UWES model. Again, this could be as a result of the large sample size (Jöreskog & Sörbom, 1993). Furthermore, the PGFI value of lower than 0,80, NFI, TLI and CFI values of lower than 0,95 and a high RMSEA value of 0,09 are indicative

of failure to confirm the hypothesised model. Therefore, modification indexes as well as standardised residuals were examined.

Post hoc analyses

Based on the high standardised residuals, it was decided to re-specify the 1-factor model with four items deleted (Items 3, 11, 15 and 16). After reviewing the modification indexes, it was decided that the model fit might be further improved by allowing error terms to correlate between Item 4 and Item 5 and between Item 8 and Item 9. In summary, this model was based on 13 of the original 17 items and included correlated errors. In reviewing results bearing on the analysis of this model, Table 5 summarises the goodness-of-fit statistics.

Table 5

Goodness-of-Fit Statistics for Model 2 of the 1-factor Structure

Model	χ^2	χ^2/df	GFI	AGFI	PGFI	NFI	TLI	CFI	RMSEA
Default model	777,52	12,34	0,95	0,93	0,66	0,96	0,95	0,96	0,06

The fit statistics in Table 5 indicate a good fit for the re-specified model. Although the χ^2 value ($df = 63; p = 0,00$) is still high, it is considerably lower than those in Model 1. All the other fit statistics indicate excellent fit of the measurement model to the data. Since this model fit was satisfactory, no further modifications of the model were considered.

The descriptive statistics, alpha coefficients and inter-item correlations of the three factors of the UWES are given in Table 6.

Table 6

Descriptive Statistics, Alpha Coefficients and Inter-Item Correlations of the UWES

Item	Mean	SD	Skewness	Kurtosis	$r(\text{Mean})$	α
VI	21,04	6,27	-0,69	0,16	0,42	0,78
DE	22,79	6,78	-0,98	0,40	0,62	0,89
AB	20,71	6,37	-0,62	0,01	0,41	0,78

The Cronbach alpha coefficients of the scales are considered to be acceptable compared to the guideline of $\alpha > 0,70$ (Nunnally & Bernstein, 1994). Furthermore, the inter-item correlations are considered acceptable compared to the guideline of $0,15 < r < 0,50$ (Clark & Watson, 1995). It appears that the scales have acceptable levels of internal consistency.

Although it seems as if the 1-factor model fitted the data better than the 3-factor model, this is based only on slightly better goodness-of fit indices, and after four items were deleted. Therefore, these results provide support for Hypotheses 1.

Next, exploratory factor analysis and target (Procrustean) rotation were used to determine the construct equivalence of the UWES. The factor loadings of race groups were rotated to one target group. Factorial agreement was estimated using Tucker's coefficient of agreement (Tucker's phi). The Tucker's phi-coefficients for the four race groups are given in Table 7.

Table 7
Construct Equivalence of the UWES for Different Race Groups

Group	<i>N</i>	Percentage	Tucker's phi	Tucker's phi	Tucker's phi
White	952	41,55	0,99	0,99	0,99
Black	946	41,29	0,99	0,99	0,99
Coloured	309	13,49	0,99	0,99	0,99
Indian	84	3,67	0,99	0,99	0,99

Inspection of Table 7 shows that the Tucker's phi coefficients for White, Blacks, Coloured and Indian police members were acceptable. Consequently, further bias analyses were carried out on the items of the UWES.

The results of the item bias analyses that were carried out through analysis of variance for the 15 items of the adapted UWES are reported in Table 8.

Table 8

Item Bias Analyses of the UWES

Item	Tot_SS	Df_g	SS_g	F_g	Eta square	Df_i	SS_i	F_i	Eta square
Vigour									
UWES1	5633,00	3	50,50	9,30	0,01	27	71,70	1,50	0,01
UWES8	4868,60	3	280,60	74,20	0,05	27	124,30	3,70	0,03
UWES12	3971,40	3	36,10	9,80	0,01	27	50,00	1,50	0,01
UWES15	4546,00	3	73,70	19,10	0,02	27	101,20	2,90	0,02
UWES17	3698,90	3	20,30	6,00	0,01	27	74,40	2,40	0,02
Dedication									
UWES2	3787,90	3	17,60	6,20	0,01	27	31,40	1,20	0,01
UWES5	3039,20	3	11,50	5,50	0,00	27	31,30	1,70	0,01
UWES7	3720,90	3	8,70	3,50	0,00	27	23,50	1,10	0,01
UWES10	2915,40	3	18,20	8,20	0,01	27	32,30	1,60	0,01
UWES13	3548,00	3	1,20	0,50	0,00	27	17,40	0,70	0,01
Absorption									
UWES3	4320,30	3	113,50	26,50	0,03	27	78,70	2,00	0,02
UWES6	5941,10	3	53,40	9,50	0,01	27	74,60	1,50	0,01
UWES9	3741,70	3	28,90	8,70	0,01	27	40,00	1,30	0,01
UWES11	3975,50	3	28,40	7,90	0,01	27	36,70	1,10	0,01
UWES13	5485,40	3	38,50	7,60	0,01	27	40,20	0,90	0,01

Table 8 shows no practical significant eta square values. This indicates that the means of the race groups for the different score levels do not differ from zero in a systematic way. No uniform or non-uniform bias exist regarding the items of the UWES for Whites, Blacks, Coloureds and Indians. These results provide support for Hypotheses 2.

DISCUSSION

The current study examined, for the first time in South Africa, the psychometric properties of the UWES, an instrument constructed to measure the engagement levels of employees. The objectives were to determine the construct validity and internal consistency of the UWES and to test its construct equivalence and bias for different race groups in a sample of police officers.

In order to obtain a factor structure that best represents the UWES, exploratory factor analysis was used to assess the factorial structure. However, the solution yielded factors that

could not be interpreted meaningfully. Because the preliminary research of Schaufeli and colleagues (2002, in press) concluded that work engagement is a multidimensional construct comprising three dimensions, it was decided to test a three-factor model, using structural equation modelling.

The hypothesised three-factor model of the UWES fitted the data, albeit after removing two unsound items, based on their high standardised residuals, and after allowing some error terms to correlate. The two items that were deleted in the three-factor model were item 4 ("I feel strong and vigorous in my job") and item 14 ("I get carried away by my work").

Because the specification of correlated error terms for purposes of achieving a better-fitting model is not an acceptable practice and error terms were allowed to correlate between items belonging to different subscales (vigour and absorption), the fit of an alternative unidimensional model was assessed as well. This model was also rejected on both substantive and statistical grounds. Additional exploratory work revealed substantial improvement in model fit with the deletion of four items (item 3, "Time flies when I'm working", item 11, "I am immersed in my work", item 15, "I am very resilient, mentally, in my job" and item 16, "It is difficult to detach myself from my job"). Error terms were also allowed to correlate in order to improve model fit (Byrne, 2001).

Although Schaufeli et al. (2002, in press) confirmed a three-dimensional construct in previous studies, the three-factor structure is by no means to be considered self-evident in this sample of police officers. The three-factor model represented the data quite well. However, the one-factor model that included a specification of correlated errors to account for the shared domain-specific variances fitted the data better than the revised three-factor model. This is evident from the lower χ^2 value and goodness-of-fit indexes that indicated better fit.

These results are in contrast to the findings of Schaufeli et al. (in press). Although their hypothesised three-factor model did also not fit well to the data of either of the three samples, the fit of a one-factor model was inferior in comparison with a three-factor model in all three samples. It must be mentioned that they allowed error terms to correlate in all three subscales.

In examining the factor structure, some undesirable psychometric characteristics were found to be associated with several items in the UWES. Items 4 and 14 (in the three-factor model) and items 3, 11, 15, and 16 (in the one-factor model) showed high standardised residual errors. Additionally, these items had the highest modification indexes. These findings suggest that the items may require either deletion or content modification, in which the latter must rather be considered. The particular items may be problematic because they do not correspond to the conceptual domain of the particular dimension (in the case of the three-factor model). However, it is more likely that they are somewhat ambiguous, or that they are either sample- or country-specific. Also, the problems with some of these items may be related to difficult words that some of the participants could have found difficult to understand and/or interpret (e.g. vigorous, immersed and resilient). This is highly likely, because only 11 percent of the sample were English-speaking, while 49 percent were Afrikaans-speaking officers. The remaining 40 percent of the sample also spoke a language other than English.

The prominent correlated errors in this study present an important problem. In general, the specification of correlated error terms for the purpose of achieving a better-fitting model is not an acceptable practice. Correlated error terms in measurement models represent systematic, rather than random, measurement error in item responses. They may derive from characteristics specific either to the items or the respondents (Aish & Jöreskog, 1990). For example, if these parameters reflect item characteristics, they may represent a small omitted factor. However, as may be the case in this instance, correlated errors may represent respondent characteristics that reflect bias such as yea-/nay-saying, social desirability (Aish & Jöreskog, 1990), as well as a high degree of overlap in item content (when an item, although worded differently, essentially asks the same question) (Byrne, 2001).

However, previous research with psychological constructs in general (e.g. Jöreskog, 1982; Newcomb & Bentler, 1988; Tanaka & Huba, 1984), and with measuring instruments in particular (Byrne, 1988, 2001), has demonstrated that the specification of correlated errors can often lead to substantially better fitting models. Bentler and Chou (1987) also argue that the specification of a model that forces these error parameters to be uncorrelated is rarely appropriate with real data. Therefore, it was considered more realistic to incorporate the correlated errors in this study, rather than to ignore their presence.

It is believed that this confusing state of affairs regarding the UWES does not reflect weaknesses inherent in the instrument, but is rather due to more general factors. First, the UWES is a recently constructed measuring instrument. Therefore, relatively few studies have critically reviewed its psychometric properties. In order to study the construct validity of work engagement in greater detail, additional theory-driven research is needed. Secondly, the UWES is an instrument that was originally constructed from data based on samples of individuals in the Netherlands (Schaufeli & Bakker, 2001). Therefore, valid research that compares levels of work engagement in South Africa is lacking and a thorough psychometric evaluation of this instrument in our specific national context will be influenced by the specific culture of the country (or more specifically, the culture of the police organisation). Schaufeli et al. (in press) also found that the hypothesised three-factor model of work engagement was invariant across Spanish, Dutch and Portuguese samples. Also, the dimensionality of the UWES could be influenced because of the high reported correlations between the three dimensions. Explicit theory indicating exactly how the three sub-scales relate to one another and to other variables must be developed before one can evaluate thoroughly the theoretical validity of a three-component conceptualisation.

Internal consistencies were computed for the three engagement scales, which revealed that all three subscales are sufficiently internally consistent according to the guideline of Nunnally and Bernstein (1994). The alpha coefficient of 0,92 for the one-factor model was considerably higher.

Construct (structural) equivalence was used to compare the factor structures of the UWES for different cultural groups included in the study. Equivalence was acceptable for White, Black, Coloured and Indian police members. Furthermore, bias analyses were carried out on the items of the UWES. Bias was examined for each item separately. In this analysis, it was found that the means of the race groups did not differ in a systematic way. It can be deduced that the UWES items do not show uniform or non-uniform bias. Therefore, it seems acceptable to use the UWES to compare work engagement of different race groups.

In conclusion, the data strongly suggest that the one-factor model better fits the data than the three-factor model. However, there is, as yet, insufficient evidence to suggest that a one-factor model is superior to a three-factor model. Thus, although a one-factor model fits the data better, a three-factor model will also fit the data well. Based on the results obtained in

this study, it seems as if the UWES must undergo intensive psychometric evaluation before it could be used as a suitable instrument for measuring engagement of police members in the SAPS.

This study had several limitations. First, self-report measures were exclusively relied upon. This causes a particular problem in validation studies that use self-report measures exclusively because at least part of the common variance of the measures has to be attributed to method variance (Schaufeli, Maslach & Marek, 1993). The use of a cross-sectional study design also represents a limitation, i.e. that of the ability to test causal assumptions regarding the engagement syndrome. Longitudinal data would allow for forming a better understanding of the true nature of work engagement. Also, items were allowed to correlate in the model specification. This may impose interpretation problems because as correlated error terms are added to the model, the correspondence between the posited construct of interest and the empirically defined factor becomes unclear (Gerbing & Anderson, 1984).

RECOMMENDATIONS

There appear to be several research issues that flow from this study and which require attention in increasing both our understanding of work engagement and the usefulness of this concept. Clearly, further construct validity research is needed to establish more fully the factorial validity of the UWES. None of the solutions could be regarded either as effectively confirming the authors' proposed three-subscale structure, or as an adequate replication of the factor structures found in their studies (Schaufeli et al., 2002, in press).

The second issue relates to problem items. Individual items of the UWES may need to be carefully examined when they are used in South African samples. This issue can also be clarified in future research that compares samples from different occupations. Because different problem items emerged with different models, it is more evidence that further construct validity research is needed in order to establish more fully the psychometric soundness of the UWES. The findings of this study also suggest the need for possible improvement to item content. This implies that the wording of certain items must be modified in order to make them more appropriate for the specific context. It also seems important to work towards improving the UWES for South African circumstances by identifying a core set of items that could most validly measure the concept of work engagement.

Four suggestions for future research derive from the present findings. Research is needed to determine the reliability and validity of the UWES in other samples in South Africa. Research is needed in other occupations to establish norms for engagement levels other than police officers. Future studies should use large samples and adequate statistical techniques (e.g. structural equation modelling). Large sample sizes might provide increased confidence that study findings would be consistent across other similar groups. Researchers contemplating future validation of the UWES are urged to utilise statistical programs that can yield a measure of multivariate normality, and provide appropriate estimation procedures, given findings of non-normal data. Finally, in order to overcome the problem of systematic measurement error in item responses, it is recommended that the items of the MBI-GS and UWES be combined in a single questionnaire for research purposes.

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CHAPTER 4

RESEARCH ARTICLE 3

BURNOUT AND WORK ENGAGEMENT IN THE SOUTH AFRICAN POLICE SERVICE*

K. STORM

S. ROTHMANN

*Research Programme "Human Resource Management for Development", Research Unit
"Decision-making and Management for Economic Development", PU for CHE*

ABSTRACT

The objectives of this research were to determine norms for the Maslach Burnout Inventory - General Survey (MBI-GS) and the Utrecht Work Engagement Scale (UWES) for the South African Police Service (SAPS) and to determine differences between the burnout and work engagement levels of various demographic groups. A cross-sectional survey design was used. Stratified random samples ($N = 2\,396$) were taken of police members from nine provinces in South Africa. The MBI-GS, UWES and a biographical questionnaire were administered. The results showed that practically significant differences existed between burnout in three demographic groups (based on education, race and province). No practically significant differences were found between work engagement and demographic characteristics.

OPSOMMING

Die doelstellings van hierdie navorsing was om norme vir die Maslach-uitbrandingsvraelys - Algemene Opname (MBI-GS) en Utrecht-werksbegeesteringskaal (UWES) in die Suid-Afrikaanse Polisie diens (SAPD) te bepaal en verskille tussen die uitbrandings- en begeesteringsvlakke van verskillende demografiese groepe te bepaal. 'n Dwarssnee-ontwerp is gebruik. Gestratifiseerde ewekansige steekproewe ($N = 2\,396$) is van polisie lede uit nege provinsies geneem. Die MBI-GS, UWES en 'n biografiese vraelys is afgeneem. Die resultate het aangetoon dat daar prakties betekenisvolle verskille bestaan tussen uitbranding in drie demografiese groepe (gebaseer opvoedingsvlak, ras en provinsie). Geen prakties betekenisvolle verskille is tussen werksbegeesting en demografiese eienskappe gevind nie.

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Police work has often been identified as a particularly stressful occupation (Alexander, 1999; Anshel, 2000; Paton & Violanti, 1999). The stress that the individual police officer sustains includes exposure to death and carnage, overt violence, hostility on the part of citizens, work overload, time pressure, lack of participation in decision-making, pressure of law suits and civil litigation, and inadequate resources, such as poor equipment and staff shortages (Biggam, Power, MacDonald, Carcary & Moodie, 1997; Kirkcaldy, Cooper & Ruffalo, 1995; McCafferty, McCafferty & McCafferty, 1992). This is also true for police officers in South Africa, where the socio-economic and political turmoil of the past three decades is characterised by high levels of crime and violence (Gulle, Tredoux & Foster, 1998; Marks, 1995; Nel & Burgers, 1996). The South African Police Service (SAPS) has also undergone tremendous social change and transformation since the first democratic election in 1994. Transformation from a police force to a police service and community policing took place, the rank structure was changed from a military structure to more police-orientated terminology, and an affirmative action policy was also implemented (Van der Walt, 2002).

Police officers have to cope with these pressures of transformation and social change, as well as with various job demands, often with limited resources. This could have an impact on police members' services. Tracking and addressing their effectiveness in areas that could possibly impact on the standard of their services is therefore of great importance. One area that should be researched in this regard is burnout (Maslach & Jackson, 1986). Although burnout has been defined in a variety of ways, most authors describe this phenomenon as a psychological syndrome of emotional exhaustion, depersonalisation and reduced personal accomplishment that can occur among individuals who work with other people in some capacity (Maslach, 1993, p. 20). Schaufeli and Enzmann (1998, p. 36) present more of a "working" definition of burnout. They define burnout as "a persistent, negative, work-related state of mind in 'normal' individuals that is primarily characterised by exhaustion, which is accompanied by distress, a sense of reduced effectiveness, decreased motivation, and the development of dysfunctional attitudes and behaviours at work".

Research on burnout has shown that it might have negative consequences for both organisations and individuals. Burnout has been related to health problems, including depression, a sense of failure, fatigue and loss of motivation, as well as negative organisational outcomes such as absenteeism, turnover rates and lowered productivity

(Schaufeli & Enzmann, 1998). This emphasises the importance of effective individual and organisational practices to deal with burnout (Cordes & Dougherty, 1993). This is also true for police officers. Statistics regarding continuous exposure to violence, retirement as a result of stress-related psychological disorders and medical reasons as well as the high suicide rate in the SAPS serve as an indication of the growing contention that many police officers experience their circumstances as stressful and traumatic (Kopel & Friedman, 1999). Also, the costs of medical boarding are high in terms of loss of irreplaceable expertise as well as the loss of valuable manpower. Therefore, it seems necessary and relevant to investigate the burnout levels of South African police members.

A recent trend emerged in Occupational Health Psychology. Historically, psychological health research almost exclusively paid attention to the side of psychological dysfunction, thereby neglecting the psychological well-being of individuals (Seligman & Csikszentmihalyi, 2000). However, around the turn of the millennium, there seems to be a strong scientific interest in psychological health and well-being. This new paradigm is called "positive psychology". It focuses on the presence of wellness, rather than the absence of illness. The aim of positive psychology is to remind us that the field of psychology is not just the study of pathology, weakness and damage, but also of strength and virtue (Seligman & Csikszentmihalyi, 2000). This paradigm shift from a pathogenic orientation towards a salutogenic/fortigenic perspective is also developing in South Africa, for example in the work of Strümpfer (1995, 2002), who focuses on the fortigenic paradigm, and Wissing and Van Eeden (2002), who focused on empirical clarification of psychological well-being.

This shift to the positive pole of employees' well-being is also evident in burnout research with the recently introduced concept of engagement - the assumed antipode of burnout. Therefore, employees' adaptation at work could also be studied in a positive way. Engagement is defined as an energetic state in which the employee is dedicated to excellent performance at work and is confident of his or her effectiveness (Schutte, Toppinen, Kalimo & Schaufeli, 2000).

The concept of work engagement is also applicable to police work in focusing on the well-being and health of police officers. Two decades of research in the police stress literature has provided little information about the extent to which policing is stressful. This resulted in

relatively little being known about the quality of life among police officers (Hart, Wearing & Headey, 1995). In their attempts to identify the sources of police stress, researchers have focused almost exclusively on the negative aspects of policing (e.g. Band & Manuelle, 1987; Greller, Parsons, & Mitchell, 1992). This resulted in an overall focus of psychological stress in policing and thus an absence of well-being. It is therefore necessary to study police work also in a positive way. This could be done by focusing on the concept of work engagement or the different levels of engagement experienced by police officers.

One of the problems in assessing the burnout and work engagement levels of police members is the lack of validated cut-off points (Schaufeli & Van Dierendonck, 1995). Because of a lack of South African norms for the Maslach Burnout Inventory-General Survey (MBI-GS), it is difficult to identify burnout at an early stage. A lack of norms also exists for the Utrecht Work Engagement Scale (UWES). Therefore, burnout and work engagement levels could only be determined relative to this sample and could serve as reference of burnout as well as work engagement levels for police officers in the SAPS. Furthermore, most studies do not systematically investigate demographic differences in either burnout or work engagement (Maslach, Schaufeli & Leiter, 2001; Schaufeli & Enzmann, 1998). Frequently studied demographic variables include age, gender and level of education. Additional demographic correlates of burnout researched in police work include the size of the force in which one works, as well as the rank of the officer. It also seems relevant to consider differences in burnout and work engagement between different ethnic groups as well as between the different provinces in South Africa.

The objectives of this research were to determine norms for the Maslach Burnout Inventory - General Survey and the Utrecht Work Engagement Scale for the South African Police Service and to determine differences between the burnout and work engagement levels of various demographic groups.

Burnout and policing

Although Bradley (1969) first mentioned the term "staff burnout" in an article about probation officers, Herbert Freudenberger (1974) is generally considered to be the founding father of the burnout syndrome (Schaufeli & Enzmann, 1998). He used it as a metaphor to

describe a phenomenon he observed among volunteers in a so-called Free clinic and who showed symptoms of emotional depletion and a loss of motivation and commitment (Freudenberger, 1974, 1975). Since then, burnout has attracted much attention in the popular press, the professional field and the scientific community.

The concept of burnout was initially closely linked to the human services such as health care, education and social work, where employees do "people work" of some kind. However, it became clear that burnout also exists outside the human services (Maslach & Leiter, 1997). Consequently, the original version of the Maslach Burnout Inventory (Maslach & Jackson, 1981a, 1986) was adapted for use outside the human services. This new version was called the MBI-General Survey (MBI-GS) (Schaufeli, Leiter, Maslach & Jackson, 1996). The MBI-GS assesses parallel dimensions to those contained in the original MBI, except the items that do not explicitly refer to working with people.

The MBI-GS comprises three subscales: Exhaustion (Ex), Cynicism (Cy) and Professional Efficacy (PE). Contrary to the MBI-HSS, the exhaustion items of the MBI-GS are generic; they refer to fatigue, but without direct reference to people as the source of those feelings, as in the MBI-emotional exhaustion subscale. Cynicism reflects indifference or a distant attitude towards one's work in general. Unlike previous versions, the MBI-GS items refer to work itself rather than towards recipients of one's service or personal relationships at work. Professional efficacy covers a broader scope than personal accomplishment as measured by the MBI-HSS. It encompasses both social and non-social accomplishments at work. Also, a person is not classified as "burned out" or "not burned out" but rather placed on a continuum from "more" to "less burned out".

There has been much interest in the occupational stress of policing and a growing body of literature that researched this area since the late 1960's. However, burnout in police officers, especially as measured by the MBI, has rarely been studied (Kop, Euwema & Schaufeli, 1999; Loo, 1994). This is also true for the South African context. Despite acknowledgement of the extremely high crime rate and exposure to traumatic stressors in the SAPS, only one study was found that investigated burnout of police officers in South Africa (Pieters, 1995).

A review of the literature on police officers offered conflicting findings regarding burnout. In the Netherlands, Kop et al. (1999) found that the level of emotional exhaustion was considerably lower for police officers than for workers in the human services. The level of depersonalisation was comparable, and the average for personal accomplishment was slightly, but significantly higher compared to the reference group. Golembiewski and Kim (1990) found that over 38 percent of the state police fall in the three most advanced phases of burnout, but also mentioned that police officers do about as well as other occupations.

According to Whitehead (1987) and Whitehead and Lindquist (1985), probation/parole officers also seem to experience relatively low levels of burnout. In their studies only approximately 10%-20% of these officers experienced high levels of emotional exhaustion and depersonalisation. On the other hand, in a sample of correctional officers, Lindquist and Whitehead (1986) found that 20% to 33% of the officers reported problems with burnout. Approximately one-third of the officers reported a high level of emotional exhaustion and almost one-quarter reported high levels of depersonalisation and a negative sense of personal accomplishment. In their study of 43 police officers in the United States of America using the MBI, Anson and Bloom (1988) found that police officers were no more burned out than other "people-processing" occupations in the criminal justice system.

There is also evidence in the literature to support the notion that police officers suffer moderate to high levels of job burnout (Colegrove, 1983; Jackson & Maslach, 1982). Stearns and Moore (1990) studied the burnout levels of Canadian police officers and found moderate to high levels of depersonalisation and lack of personal accomplishment, but lower levels of emotional exhaustion. Also in a sample of Canadian police managers, Loo (1994) found similar results to those of Stearns and Moore's (1990). Gaines and Jermier (1983) and Maslach and Jackson (1981b) found high levels of emotional exhaustion in their samples of police officers.

In a study in South Africa, Pieters (1995) found relatively low burnout levels in a sample of police officers. However, it must be mentioned that he used the Burnout Measure (Pines, Aronson & Kafry, 1981) – a measuring instrument that has not yet been standardised in South Africa and could also not be used to classify people who are presumably at risk of developing burnout because valid norms are lacking (Schaufeli, Enzmann & Girault, 1993). Pieters

(1995) also mentioned that the low burnout levels could be due to the measuring instrument as well as to a denial of the problem in the SAPS.

A study conducted by the SAPS Institute for Behavioural Sciences has found that stress-related trauma which results in police members being retired on medical grounds has increased (The Star, 1996). Increases in layoffs for psychological reasons since 1991 have been noted, suggesting that many police officials experience their present circumstances as traumatic and feel unsupported and unable to cope. Often, members of the police force are also victims of violence. In Gauteng Province alone there were 143 attacks on police officials in 2001. An average of four officers a month was killed in the line of duty (Van der Walt, 2002). The high suicide rate in the SAPS is also indicative of the distress experienced by its members (Rothmann & Van Rensburg, 2002).

There are often few positive counterbalances to the psychological and emotional stresses that accompany the police profession. Police officers do not have appropriate outlets for dealing with stresses common in their work. Expression of feelings is extremely limited in the police culture. In the face of highly traumatic and stressful situations, it is expected of them to maintain their composure and distance themselves from intense emotional reactions (Nel & Burgers, 1996). As the psychological and emotional stress begins to take its toll, many police officers eventually become almost unemotional and find it difficult to respond emotionally to conflict situations (Maslach, 1978). Therefore, it could be expected that police officers would experience high levels of exhaustion.

Negative aspects of police work such as threats of violence, the militaristic and bureaucratic nature of the organisation and contact with the public that are sometimes negative and confrontational may contribute to feelings of cynicism (Stearns & Moore, 1993). The latter is the most paradoxical, in that the police officer may tend to feel rejection from a society which he or she has undertaken to serve and protect. Violence, with its resultant consequences, is another factor that influences levels of cynicism. The constant exposure to violence and crime tends to change almost any person's outlook upon his environment as well as his feelings toward other people. According to Violanti and Marshall (1983), cynical and authoritarian attitudes are considered to be a form of coping with the demands of such a stressful

occupation. Because of a possibility of overexposure of police members to violence and trauma in South Africa, high levels of cynicism are expected.

Police professionals also seem prone to experiencing an overall lack of feeling professional efficacy. Police members who see little, if any, positive change as a result of their efforts are likely to view themselves negatively and do only what is required and nothing more (Jackson, Schwab & Schuler, 1986). These officers will eventually feel that nothing they do will truly satisfy anyone. Ever-rising crime rates and violence, lack of opportunity due to the nature of the job, recurring conflicts settled the previous day as well as little chance for promotion, to name a few, can contribute to decreased feelings of efficacy.

Burnout and demographic characteristics

Upon reviewing the literature of police burnout, it becomes apparent that there is no single consensus as to the demographic variables that relate to police officer burnout. Age is the one demographic variable that has been most consistently related to burnout (Maslach et al., 2001, Schaufeli & Enzmann, 1998). Younger employees reported higher burnout levels than those over 30 or 40 years old.

The relationship of burnout with gender is not so clear-cut. Some studies show higher burnout for women, some show higher scores for men, and others found no difference at all. The one small but consistent difference is that women scored slightly higher on exhaustion and men on depersonalisation (Maslach et al., 2001). Johnson (1991) found that female officers scored relatively high on emotional exhaustion, whereas males scored relatively high on depersonalisation, while Kop et al. (1999) found no difference between male and female police officers. Stearns and Moore (1990) found that males reported only moderate burnout on the depersonalisation subscale, while females reported a higher level of overall burnout. On the personal accomplishment subscale, both male and female police officers reported high burnout levels. Cannizzo and Liu (1995) also found that males scored higher on depersonalisation and females higher on emotional exhaustion, but these differences were not statistically significant.

Some indications were found that those with a higher level of education were more prone to experience burnout than less educated employees. Schaufeli and Enzmann (1998) attribute this to higher expectations of more educated individuals or to the fact that they might gain positions with more responsibility (over less educated persons). On the other hand, Cannizzo and Liu (1995) found that officers with no college education reported higher burnout levels than officers with higher education. According to these authors, this result could be attributed to the fact that a complete college education enables a person to more readily develop a wide range of interpersonal skills that could help him/her to decrease the chance of becoming burned out. Colegrove (1983) found no significant relationship between burnout and level of education attained.

Regarding the demographic variables of rank and size of police force, Cannizzo and Liu (1995) reported that sergeants experienced the highest levels of burnout, while Stearns and Moore (1993) found that constables are a high-risk group for depersonalisation. Burke (1987) found no significant relationship between rank and burnout. Burke (1997) found three significant relationships between individual demographic variables and burnout. Officers on larger forces, who are less educated and lower ranked reported greater depersonalisation.

As for ethnicity, no clear empirical trends exist. According to Alexander (1999) particular officers may face additional demands from other intrinsic life factors, such as their race. Little academic attention has been paid to the stressors with which police members from minority groups or different cultural groups must cope. For officers from non-white backgrounds, intrinsic and organisational stressors combine together in a convoluted manner. The factor of discrimination is too often present in police departments and could contribute to a sense of emotional exhaustion and frustration characteristic of burnout (Alexander, 1999). However, Maslach (1982) stated that research on ethnic background and burnout indicated that fewer American Black people sustained burnout than did American White people.

There is reason to believe that different burnout levels will occur in different provinces of South Africa. Regarding different levels of crime and violence, quite significant differences exist among provinces (Crime Information Analysis Centre, December, 2001). Most crimes were committed in Gauteng and KwaZulu-Natal. The highest levels of robbery and motor vehicle theft (which are related to organised crime) occur in the three Metropolitan areas,

namely Gauteng, Greater Durban and Greater Cape Town. Murders as a result of political/faction fighting mainly occur in KwaZulu-Natal and Gauteng (93%); murders as a result of gang-related violence is mostly (74%) confined to the Western Cape, Gauteng and the Eastern Cape, while most (80%) witchcraft-related murders happen in KwaZulu-Natal (Crime Intelligence, 2001). If these crime levels are taken into account, it seems as if the highest levels of burnout will occur in Gauteng, KwaZulu-Natal, Eastern Cape and Western Cape.

Work engagement and policing

Research on the work engagement concept has taken two different, but related, paths. Maslach and Leiter (1997) rephrased the definition of burnout as an erosion of engagement with the job that is characterised by diminished energy, involvement and efficacy. They assume that work engagement can be assessed by the opposite pattern of scores on the three MBI dimensions. Schaufeli and his colleagues (2002) took a different approach and operationalised engagement in its own right. They define work engagement as a positive, fulfilling, work-related state of mind that is characterised by vigour, dedication, and absorption. According to Schaufeli, Salanova, González-Romá and Bakker (2002), vigour is characterised by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, not being easily fatigued, and persistence even in the face of difficulties. Dedication is characterised by deriving a sense of significance from one's work, by feeling enthusiastic and proud about one's job, and by feeling inspired and challenged by it. Absorption is characterised by being totally and happily immersed in one's work and having difficulties detaching oneself from it.

Police work has been described as one of society's most stressful occupations (Alexander, 1999; Paton & Violanti, 1999). Yet, despite the highly stressful nature of police work, there are still officers who are able to manage the stress well enough to continue this work for years. In accordance with the development of positive psychology and the focus on psychological well-being, it is necessary to investigate the rewarding aspects of a job. Thus, in order to get a balanced picture of police work, it is important to look at both stressful and rewarding aspects of police work. However, studies that focus on the negative aspects of

police work, such as stress and burnout, are typically overwhelming, thereby neglecting potential rewards.

Contrary to the vast amount of literature that reports all the harmful and traumatic aspects of police work, Larsson, Kempe and Starring (1988) found that police officers perceived considerably more challenge than threat in these situations. They also appraised stressful situations as solvable. In contrast to earlier research, Kop et al., (1999) found that policing was experienced primarily as a rewarding job. Contact with civilians or "working with people" was rated the most rewarding part of their work. Other positive aspects include variation of work, freedom, responsibility, action and working on the street in the midst of society. Kop et al. (1999) also found that specific aspects of police work were often mentioned as rewarding, which include special duties such as working with a police dog and contact with external institutions.

Hart et al. (1995) also showed in two samples that police officers reported significantly more favourable levels of well-being and psychological distress when compared to school teachers, tertiary students and the Australian norms. Hart (1994) showed that the relationship between negative teaching experiences and morale, as well as the relationship between positive teaching experiences and psychological distress, were in fact spurious. These findings suggest that positive *and* negative work experiences must be taken into account when trying to establish the determinants of police officers' psychological well-being (Hart, Wearing & Heady, 1993; 1994).

Work engagement and demographic characteristics

No information is available regarding relationship between work engagement and different demographic variables. However, other relevant findings seem interesting. From a pathogenic view, Edwards (1989) and Nell (1994) perceived lower levels of psychological well-being among Black people. Hobfoll and Lilly (1993) found that resistance resources are lower in Black communities. Therefore, it seems that people from these groups are prone to a lower sense of coherence and more stress. Wissing and Van Eeden (2002) also found significant differences between the scores of Black and White individuals on indexes of psychological well-being. However, Lightsey (1996) noted that much more studies are needed to compare

results across cultures, race and ethnicity, in order to understand the nature of psychological well-being. Taking these results into account, it could be expected that coloured police officers would experience lower levels of engagement.

Wissing and Van Eeden (2002) found significant differences between men and women. According to these authors, the results of their study are in line with those of Lundberg and Parr (2000) and Sheridan, Mulhern and Martin (1999), indicating that women experience more psychosomatic symptoms. Hobfoll (1989) also argues that women may have less access to resources that could help to buffer the negative effects of stress, and maintain wellness. It thus seems that female police officers will experience lower levels of work engagement than male officers. Regarding age, Wissing and Van Eeden (2002) found clear differences between young and older individuals on various indexes of psychological well-being.

The above discussion leads to the following hypotheses:

- H1: Significant differences regarding burnout levels exist between different age groups, gender, level of education, rank, size of station, different race group and provinces.
- H2: Significant differences regarding work engagement levels exist between different age groups, gender, level of education, rank, size of station, different race groups and provinces.

METHOD

Research design

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

Study population

Random samples ($N=2\ 396$) were taken from police stations in the Limpopo Province, Gauteng, Free State, Mpumalanga, Northern Cape, Western Cape, Eastern Cape, KwaZulu-Natal and the North West Province. Stations were divided into small (fewer than 25 staff members), medium (25 – 100 staff members) and large (more than 100 staff members) stations. All police members at randomly identified small and medium stations in each of the provinces were asked to complete the questionnaires. In the large stations stratified random samples were taken according to sex and race. Table 1 presents some of the characteristics of the participants.

Table 1
Characteristics of the Participants

Item	Category	Percentage
Race	White	41,23
	Black	40,97
	Coloured	13,38
	Indian	3,64
Rank	Constable	7,54
	Sergeant	19,16
	Captain	23,33
	Inspector	43,73
	Senior Superintendent	3,06
	Other	3,20
Province	North West Province	15,86
	Gauteng	9,77
	Mpumalanga	7,30
	Limpopo Province	8,01
	KwaZulu-Natal	10,73
	Free State	13,86
	Eastern Cape	11,64
	Northern Cape	8,89
Size of station	Western Cape	13,94
	Small	31,45
	Medium	39,05
Education	Large	29,51
	Grade 10	11,01
	Grade 11	5,18
	Grade 12	55,98
	Technical college diploma	2,86
	Technikon diploma	20,70
	University degree	2,16
Gender	Postgraduate degree	2,11
	Male	77,08
Marital status	Female	22,92
	Single	19,56
	Married	53,06
	Divorced	23,97
	Separated	2,11
	Remarried	1,30

The sample was mostly male (77,08%), married and had a high school education. The mean age of participants was 34,53 years, while the mean length of work experience was 12,96 years.

Measuring battery

Three questionnaires were used in the empirical study, namely the Maslach Burnout Inventory- General Survey (MBI-GS) (Schaufeli et al., 1996), the Utrecht Work Engagement Scale (UWES) (Schaufeli et al., 2002) and a biographical questionnaire.

The *Maslach Burnout Inventory-General Survey* (MBI-GS) (Schaufeli et al., 1996) was used to measure burnout. The MBI-GS has three subscales: Exhaustion (Ex) (five items, e.g. "I feel used up at the end of the workday"), Cynicism (Cy) (five items; e.g. "I have become less enthusiastic about my work") and Professional Efficacy (PE) (six items, e.g. "In my opinion, I am good at my job"). Together the subscales of the MBI-GS provide a three-dimensional perspective on burnout. Internal consistencies (Cronbach coefficient alphas) reported by Schaufeli et al. (1996) varied from 0,87 to 0,89 for Exhaustion, 0,73 to 0,84 for Cynicism and 0,76 to 0,84 for Professional Efficacy. Test-retest reliabilities after one year were 0,65 (Exhaustion), 0,60 (Cynicism) and 0,67 (Professional Efficacy) (Schaufeli et al., 1996). All items are scored on a 7-point frequency rating scale ranging from 0 ("never") to 6 ("daily"). High scores on Ex and Cy, and low scores on PE are indicative of burnout. Storm and Rothmann (in press) confirmed the 3-factor structure of the MBI-GS in a sample of 2 396 SAPS members, but recommended that Item 13 should be dropped from the questionnaire. They also confirmed the structural equivalence of the MBI-GS for different race groups in the SAPS. The following Cronbach alpha coefficients were obtained for the MBI-GS: Exhaustion: 0,88; Cynicism: 0,79; Professional Efficacy: 0,78 (Storm & Rothmann, in press).

The *Utrecht Work Engagement Scale* (UWES) (Schaufeli et al., 2002) was used to measure the levels of engagement of the participants. The UWES includes three dimensions, namely, vigour, dedication and absorption, which are conceptually seen as the opposite of burnout and is scored on a seven-point scale. The UWES is scored on a seven-point frequency rating scale, varying from 0 ("never") to 6 ("always") and include questions like "I am bursting with energy every day in my work"; "Time flies when I am at work" and "My job inspires me". The alpha coefficients for the three sub-scales varied between 0,68 and 0,91. The alpha coefficient could be improved (α varies between 0,78 and 0,89 for the three sub-scales) by eliminating a few items without substantially decreasing the scale's internal consistency. Storm and Rothmann (in press) obtained the following alpha coefficients for the UWES in a sample of 2 396 members of the SAPS: Vigour: 0,78; Dedication: 0,89; Absorption: 0,78.

A questionnaire was developed to gather information about the demographic characteristics of the participants. This questionnaire gave participants the option of supplying their name and service number. Other information that was gathered included: province and station, age, gender, years of service, years in current position (to assess advancement), educational qualifications, marital status, satisfaction with relationship with significant other, language, history of disciplinary action, self-rated performance, self-rated job satisfaction, medical conditions, use of prescription and over-the-counter medicine, reasons for medication, number of alcoholic drinks per week, smoking behaviour, number of cigarettes per day, other drug use and exercise behaviour.

Statistical analysis

The statistical analysis was carried out with the help of the SAS program (SAS Institute, 2000). Cronbach alpha coefficients and inter-item correlation coefficients were used to assess the reliability and validity of the measuring instruments (Clark & Watson, 1995). Descriptive statistics (e.g. means, standard deviations, skewness and kurtosis) and inferential statistics were used to analyse the data.

Pearson and Spearman correlation coefficients were used to specify the relationships between the variables. A cut-off point of 0,30 (medium effect, Cohen, 1988) was set for the practical significance of correlation coefficients. T-tests and one-way analysis of variance (ANOVA) were used to determine differences between the sub-groups in the sample. The following formula was used to determine the practical significance of differences (d) when t-tests were used (Steyn, 1999):

$$d = \frac{Mean_A - Mean_B}{SD_{MAX}}$$

where

$Mean_A$ = Mean of the first group

$Mean_B$ = Mean of the second group

SD_{MAX} = Highest standard deviation of the two groups

The following formula was used to determine the practical significance of means of more than two groups (Steyn, 1999):

$$d = \frac{Mean_A - Mean_B}{\text{Root } MSE}$$

where

$Mean_A$ = Mean of the first group

$Mean_B$ = Mean of the second group

Root MSE = Root Mean Square Error

A cut-off point of 0,50 (medium effect) (Cohen, 1988) was set for the practical significance of differences between means.

Pearson product-momentum correlation coefficients were used to specify the relationships between the variables. In the case where the distribution of scores was skew, Spearman correlation coefficients were computed. Effect sizes (Cohen, 1988) were computed to assess the practical significance of findings. A cut-off point of 0,30 (medium effect, Cohen, 1988) was set for the practical significance of correlation coefficients.

RESULTS

The descriptive statistics, alpha coefficients and inter-item correlations of the MBI-GS and UWES are given in Table 2.

Table 2

Descriptive Statistics, Alpha Coefficients And Inter-Item Correlations of the MBI-GS and UWES

Item	Mean	SD	Skewness	Kurtosis	$r(\text{Mean})$	α
MBI-GS						
EX	11,41	8,02	0,48	-0,64	0,58	0,88
CY	8,04	6,13	0,64	-0,29	0,48	0,78
PE	26,67	7,92	-1,09	0,97	0,40	0,79
UWES						
VI	21,04	6,27	-0,69	0,16	0,42	0,78
DE	22,79	6,78	-0,98	0,40	0,62	0,89
AB	20,71	6,37	-0,62	0,01	0,41	0,78

The scores on the three factors of the MBI-GS are normally distributed. The Cronbach alpha coefficients of the MBI-GS and UWES scales are considered to be acceptable compared to the guideline of $\alpha > 0,70$ (Nunnally & Bernstein, 1994). Furthermore, the inter-item correlations are considered acceptable compared to the guideline of $0,15 < r < 0,50$ (Clark & Watson, 1995). It appears that the scales have acceptable levels of internal consistency.

A major problem with the MBI and UWES is the lack of clinically validated cut-off points (Schaufeli, Bakker, Hoogduin, Schaap & Kladler, 2001). Schaufeli and Van Dierendonck (1995), Schaufeli, Leiter and Kalimo (1995) and Van Horn, Schaufeli, Greenglass and Burke (1997) found that levels of burnout differed among national samples, therefore comparisons with norms in other countries are impossible. As a result, the present sample of police officers is used as a normative sample. Following the test-authors of the MBI, the sample is arbitrarily divided into three equally sized groups, assuming that the top, intermediate and bottom thirds of the sample would experience "high", "average" and "low" levels of burnout and work engagement respectively (Maslach & Jackson, 1986). The subscales of the MBI-GS and UWES provide a three-dimensional perspective on burnout and work engagement respectively.

The numerical cut-off points for burnout and work engagement levels of police members are presented in Table 3.

Table 3

Categorisation of MBI and UWES Scores

	Low (lower third)	Average (middle third)	High (upper third)
Stanine	1-3	4-6	7-9
Percentage	0%-23%	24%-72%	73%-100%
MBI-GS			
EX	0-4	5-16	17-30
CY	0-3	4-11	12-24
PE	0-21	22-32	33-36
UWES			
VI	0-16	17-25	26-30
DE	0-18	19-28	29-30
AB	0-16	17-25	26-30

Scores for this sample of police officers in the SAPS are considered high if they are in the upper third of the normal distribution, average if they are in the middle third, and low if they are in the lower third. Furthermore, the scores for the MBI-GS and UWES subscales are considered separately and are not combined into a single, total score. Thus three scores, one for each dimension, are computed for each respondent.

Differences between the three burnout dimensions, work engagement and different demographic characteristics were determined using t-tests and ANOVA. Demographic variables included age, gender, level of education, rank, size of the station, race and province. Product-moment correlations between age and burnout and work engagement are shown in Table 4.

Table 4

Product-moment Correlation Coefficients between Age, the MBI and the UWES

	EX	CY	PE	VI	DE	AB
Age	-0,03	-0,04	-0,05*	0,08*	0,09*	0,09*

* Correlation is statistically significant $p \leq 0,05$

Table 4 shows that statistical significant differences exist between Age and Professional Efficacy, Vigour, Dedication and Absorption. However, none of these differences were practically significant.

Table 5 shows the differences between police members based on gender.

Table 5
Differences between Police Members based on Gender

Item	Male		Female		<i>p</i>	<i>d</i>
	Mean	<i>SD</i>	Mean	<i>SD</i>		
MGI-GS						
Exhaustion	11,24	7,83	11,94	8,48	0,08	-
Cynicism	8,00	6,10	8,13	6,22	0,67	-
Professional Efficacy	26,61	7,96	27,14	7,57	0,15	-
UWES						
Vigour	21,23	6,28	20,60	6,12	0,04*	-
Dedication	22,97	6,75	22,31	6,79	0,04*	-
Absorption	20,69	6,45	20,90	6,04	0,48	-

* Correlation is statistically significant $p \leq 0,05$

Table 5 shows that male police members obtained statistically significantly higher scores on Vigour and Dedication than female police members. However, these differences were not practically significant ($d \geq 0,50$). No statistically or practically significant differences were obtained regarding the three dimensions of burnout and gender.

Table 6 shows the differences between police members based on level of education.

Table 6

Differences between Police Members based on Education

Item	Grade 10 (<i>n</i> =219)	Grade 11 (<i>n</i> =103)	Grade 12 (<i>n</i> =1114)	College Diploma (<i>n</i> =57)	Technicon Diploma (<i>n</i> =412)	University Degree (<i>n</i> =43)	Postgraduate Degree (<i>n</i> =42)	Root MSE	<i>p</i>

MBI-GS									
EX	10,69	11,44	11,07	12,96	11,67	10,09	12,48	7,95	0,28
CY	8,36	8,33	7,78	8,40	7,87	6,23	7,33	6,08	0,41
PE	24,00 ^b	24,15 ^b	26,90	27,77	28,24 ^a	28,79 ^a	28,90 ^a	7,85	0,01 [*]
UWES									
VI	21,37	20,96	20,78	21,72	21,41	22,00	21,38	6,27	0,44
DE	23,00	23,30	22,60	22,77	22,77	23,44	23,69	6,77	0,83
AB	21,15	20,64	20,43	21,14	21,23	20,98	21,88	6,37	0,27

a Statistically and practically significant differences from education (in row) where b (medium effect, $d \geq 0,5$) is indicated

Table 6 shows that police officers with higher education (e.g. members with a Technicon Diploma, University Degree or Postgraduate Degree) experience practically significantly higher levels of Professional Efficacy than less educated members (e.g. Grade 10 and Grade 11). However, no statistical or practical significant differences were found in Exhaustion and Cynicism based on education. Furthermore, no statistically or practically significant differences were found between the three work engagement dimensions and levels of education.

Table 7 presents differences between the rank of police officers regarding burnout and work engagement.

Table 7

Differences between Police Members based on Rank

Item	Constable ¹ (n=170)	Sergeant ² (n=432)	Captain ³ (n=526)	Inspector ⁴ (n=986)	Snr. Supt. ⁵ (n=69)	Root MSE	p
MBI-GS							
EX	9,33	11,65 ¹	11,98 ¹	11,48 ¹	11,80	7,98	0,03*
CY	6,85	8,85 ¹	8,10	8,05	7,87	6,13	0,03*
PE	25,27	25,05	27,15 ²	27,20 ²	28,20 ²	7,87	0,01*
UWES							
VI	21,60	20,79	21,12	20,77	22,41	6,28	0,14
DE	23,61	22,49	22,93	22,50	22,90	6,79	0,44
AB	21,11	20,41	20,54	20,52	22,80	6,37	0,02

* Statistically significant difference where $p \leq 0,05$

Based on the results shown in Table 7, statistically significant differences exist between different ranks on the Exhaustion, Cynicism and Professional Efficacy dimensions. However, none of these differences were practically significant. No statistically or practically significant differences exist between work engagement and the different ranks.

Table 8 presents differences between police members situated in different-sized police stations and burnout and work engagement.

Table 8

Differences between Police Members based on Size of Station

Item	Small ¹ (n=633)	Medium ² (n=786)	Large ³ (n=594)	Root MSE	p
MBI-GS					
EX	10,50	11,65 ¹	11,43	7,95	0,02*
CY	8,08	8,04	7,50	6,11	0,18
PE	25,81	26,96 ¹	27,60 ¹	7,95	0,03*
UWES					
VI	20,68	20,91	21,54	6,28	3,09
DE	22,53	22,67	23,08	6,78	1,12
AB	20,58	20,61	21,07	6,38	1,19

* Statistically significant difference where $p \leq 0,05$

Table 8 shows that statistically significant differences exist between the size of the station in which a police officer is situated and the level of Exhaustion and Professional Efficacy. No practically significant differences exist between the size of the station and burnout or work engagement.

Table 9 presents differences between police members' burnout and work engagement levels based on their race.

Table 9

Differences between Police Members based on Race

Item	White ¹ (n =952)	Black ² (n =946)	Coloured ³ (n =309)	Indian ⁴ (n =84)	Root MSE	p
MBI-GS						
EX	12,14	10,77	10,18 ^b	14,58 ^a	7,95	0,01*
CY	8,37	7,90	7,31	8,92	6,15	0,02
PE	27,47	25,80 ^b	26,15 ^b	30,54 ^a	7,84	0,01*
UWES						
VI	20,25	21,36	22,88	22,04	6,23	0,01*
DE	21,12	23,95	24,05	23,12	6,66	0,01*
AB	20,17	20,75	22,03	21,57	6,35	0,01*

a. Statistically and practically significant differences from race (in row) where b (medium effect, $d \geq 0,50$) are indicated

As Table 9 shows, Indian police members experience practical significant higher scores on Exhaustion than Coloured members. However, Indian police officers experience practically significant higher Professional Efficacy than Black as well as Coloured officers. No practical significant differences were found between race and levels of Cynicism, although statistical significant differences were found between race and Cynicism. No practical significant differences were found between race and the three dimensions of work engagement.

The differences in burnout levels of police members situated in different provinces are shown in Table 10.

Table 10

Differences between Police Members in Different Provinces

Item	North West ¹ (n=380)	Gauteng Province ² (n=234)	Mpumalanga Province ³ (n=175)	Limpopo Province ⁴ (n=192)	KwaZulu-Natal ⁵ (n=257)	Free State Province ⁶ (n=332)	Eastern Cape ⁷ (n=279)	Northern Cape ⁸ (n=213)	Western Cape ⁹ (n=334)	Root MSE	p
MBI-GS											
EX	12,36	11,12	10,42	10,21	12,58 ^d	12,34	10,49	10,25 ^b	11,42	7,98	0,02 [*]
CY	8,83	7,34 ^f	7,78 ^e	7,21 ^e	8,14 ^e	9,77	7,33 ^{1,f}	7,66 ^e	7,30 ^{1,f}	6,08	0,01 [*]
PE	26,06	26,99	27,57 ^a	27,66 ^a	28,21 ^a	23,55 ^b	26,64	26,59	28,12 ^a	7,80	0,01 [*]
UWES											
VI	21,10	21,48	21,71	21,05	21,58	20,45	20,20	21,81	20,68	6,26	0,02 [*]
DE	22,95	23,66	23,36	24,20	23,47	21,72	21,74	23,40	21,88	6,74	0,01 [*]
AB	20,54	20,62	20,96	21,44	21,35	20,17	19,93	22,09	20,20	6,35	0,01 [*]

a Statistically and practically significant differences from province (in row) where b (medium effect, $d \geq 0,50$) is indicated

As shown in Table 10, statistical significant differences exist between provinces and all three dimensions of burnout (EX, CY, PE). However, Table 10 shows that police members in Mpumalanga, Limpopo Province, Kwazulu Natal and the Western Cape experience practically significantly higher scores on Professional Efficacy than police members situated in the Freestate, who experience lower levels on this dimension. No practical significant differences were found between Exhaustion and Cynicism of members in different provinces. Also, no practically significant differences were found between the three dimensions of work engagement in different provinces.

Based on these results, partial support was found for Hypothesis 1 regarding practically significant differences between burnout levels and education, race and province. No support was found for Hypothesis 2.

DISCUSSION

The first objective of the present study was to determine the levels of burnout and engagement of police members in the SAPS. However, no norm groups were available to compare the levels of burnout and engagement of the police officers in this study. According to Schaufeli and Van Dierendonck (1995), there is a strong tendency for researchers to

classify participants' burnout levels based on USA cut-off points or cut-off points used in the MBI manual (Maslach & Jackson, 1986). However, this method would lead to flagrant misinterpretations of burnout scores for two reasons.

Firstly, burnout levels differ from national sample to national sample. Schaufeli and Van Dierendonck (1995) showed that MBI-emotional exhaustion and MBI-depersonalisation scores are higher among North American nurses than among nurses from various European countries. Van Horn et al. (1997) also showed that Canadian teachers had significantly higher burnout scores than Dutch teachers, as measured with the MBI. Also, Schaufeli et al. (1995) found different burnout levels in different national samples. For example, Finnish and Canadian samples scored higher on exhaustion and on professional efficacy than did the Dutch civil service sample. No differences were found among national samples on cynicism.

Secondly, cut-off points have not been clinically derived. According to Schaufeli and Van Dierendonck (1995), classifying individuals' burnout levels according to the USA test-manual, the number of burnout cases could be overestimated, leading to the so-called "healthy worker effect" (individuals who have left the organisation because burnout have not been included in the investigation, while those relatively "normal" individuals who stayed in the organisation were included in the sample, leading to the overestimation of burnout). The UWES is also a new instrument to measure engagement, so it is understandable that no cut-off points exist.

Therefore, this sample of police officers in the SAPS served as the normative sample and can serve as reference for relative burnout levels of other police members in the SAPS. This is also relevant for the work engagement levels of police officers. Furthermore, Maslach and Jackson (1986, p. 9) stated in their test manual that "... it is strongly recommended that the original numerical scores be used rather than the categorisations of low, average and high" and "... neither the coding nor the original numerical scores should be used for diagnostic purposes". This is also true for the MBI-GS and UWES scores obtained in this sample.

The second objective was to investigate the relationship between burnout and various demographic characteristics, as well as the relationship between work engagement and demographic characteristics. Regarding burnout, no practically significant differences were

found between different age groups. This is in contrast to Maslach et al. (2001) and Schaufeli and Enzmann (1998), who found that younger employees reported higher burnout levels than those over 30 or 40 years of age.

Also, no difference was found between male and female police officers, supporting the findings of Kop et al. (1999) and Cannizzo and Liu (1995). This finding is in contrast to many studies reporting higher emotional exhaustion, and lower depersonalisation for women compared to men (Johnson, 1991; Schaufeli & Enzmann, 1998). No significant differences were found for the rank of police officers (e.g. Burke, 1987), nor for the size of the station they are situated in.

Differences were found between the burnout scores of educational groups, race groups and provinces. However, all the differences were of medium effect ($d \geq 0,50$). Regarding education, practically significant differences were found between police members with higher education (technikon diploma, university degree and postgraduate degree) compared to lower-educated members (Grade 10 and 11). Officers with a higher education experienced higher levels of professional efficacy than lower-educated members. This finding agrees with the findings of Cannizzo and Liu (1995), who found that officers with no college education reported higher burnout levels than officers with higher education.

Differences between race groups showed that Indian police officers experienced the highest levels of exhaustion and cynicism, followed by White and Black officers. Coloured officers experienced the lowest levels of exhaustion and cynicism. Indian officers experienced the highest levels of professional efficacy, followed by White and Coloured officers. Black officers experienced the lowest levels of professional efficacy. However, practically significant differences were found only between Indian and coloured officers on exhaustion and between Indian officers and Coloured and Black officers on professional efficacy.

No significant differences were found between different provinces on the exhaustion and cynicism dimensions. However, members in KwaZulu-Natal, Western Cape, Limpopo Province and Mpumalanga experienced practically significant higher levels of professional efficacy than officers situated in the Free State.

Surprisingly, no significant differences were found between work engagement of various demographic groups. Statistically significant differences were found between age and all three dimensions of work engagement. Statistically significant differences were also found between work engagement and gender, race and province. However, none of these differences were practically significant.

The present study had several limitations. First, self-reporting measures were exclusively relied upon. This causes a particular problem in validation studies that use self-report measures exclusively because at least part of the common variance of the measures has to be attributed to method variance (Schaufeli et al., 1993). There are two main limitations regarding the research design. When a cross-sectional design is used, inferences can be made about the relationship between particular variables, but causation cannot be determined. A longitudinal design would eliminate cohort effects confounding the data and their subsequent interpretations.

RECOMMENDATIONS

Firstly, managers and employees should become aware of the causes and symptoms of burnout. This could help them become aware of their own and others' exhaustion, cynicism and low professional efficacy, so that interventions can take place before the effects of burnout are too serious. Also, officers with a lower level of education, Indian, Black and Coloured officers as well as officers situated in the Free State should as early as possible receive training in how to cope with burnout. Research on work engagement could also help to answer research questions regarding the prevention of burnout and how to promote engagement in the workplace. Even though few practically significant differences were found between burnout and work engagement regarding different demographic groups, it seems necessary to examine group differences in burnout and engagement in other occupational groups as well, which can provide information for tailoring programmes and services to specific groups.

Suggestions regarding future research include research in other occupations to establish norms for burnout and work engagement levels other than the SAPS. The MBI is a widely-used instrument; however, no major psychometric studies have been published on the MBI with large samples in South Africa (Rothmann, 2002). Future studies should investigate this

shortcoming and use large samples that provide increased confidence that study findings would be consistent across other similar groups.

A major problem with the MBI-GS is the lack of clinically validated cut-off points. Researchers need to administer the MBI-GS on individuals who show the clinical profile of burnout to validate the inventory. Because burnout is not included in the DSM IV classification, individuals who suffer from neurasthenia could be used to determine the cut-off points (Rothmann, 2002).

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CHAPTER 5

RESEARCH ARTICLE 4

CAUSAL MODELS OF BURNOUT AND ENGAGEMENT IN THE SOUTH AFRICAN POLICE SERVICE*

K. STORM

S. ROTHMANN

*Research Programme "Human Resource Management for Development", Research Unit
"Decision-making and Management for Economic Development", PU for CHE*

ABSTRACT

The objective of this research was to develop and test causal models of burnout and work engagement in the South African Police Service (SAPS). A cross-sectional survey design was used. Stratified random samples ($N = 1\,910$) were taken of police members of eight provinces in South Africa. The Maslach Burnout Inventory – General Survey, Utrecht Work Engagement Scale, Police Stress Inventory and COPE questionnaire were administered. The results showed that job demands, lack of resources and coping strategies predicted exhaustion. Exhaustion and coping strategies (non-active coping and avoidance) predicted cynicism. A lack of resources and coping strategies (non-active coping and avoidance) predicted low professional efficacy. Predictors of work engagement were active coping, job demands (inverse), avoidance (inverse), seeking emotional support, turning to religion and lack of resources (inverse).

OPSOMMING

Die doelstelling van hierdie navorsing was om oorsaaklike modelle van uitbranding en begeestering in die Suid-Afrikaanse Polisie diens (SAPD) te ontwikkel en te toets. 'n Dwarsnee-ontwerp is gebruik. Gestratifiseerde ewekansige steekproewe ($N = 1\,910$) is geneem van polisie lede uit agt provinsies. Die Maslach-uitbrandingsvraelys - Algemene Opname, Utrecht Werksbegeesteringskaal, Polisie stres-opname en COPE vraelys is afgeneem. Die resultate het aangetoon dat uitputting voorspel word deur werkseise, 'n gebrek aan hulpbronne en coping-strategieë. Uitputting en coping-strategieë (nie-aktiewe coping en vermyding) het sinisme voorspel. 'n Gebrek aan hulpbronne en coping-strategieë (nie-aktiewe coping en vermyding) het lae professionele doeltreffendheid voorspel. Voorspellers van werksbegeestering was aktiewe coping, werkseise (invers), vermyding (invers), soeke na emosionele ondersteuning, steun op geloof en 'n gebrek aan hulpbronne (invers).

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Burnout, a negative work-related psychological state that is primarily characterised by mental exhaustion, has been intensively studied during the past 25 years (Schaufeli & Buunk, in press). Despite extensive research on job stress experienced by police officers, burnout in the police profession has rarely been investigated (Kop, Euwema & Schaufeli, 1999). In comparison with other occupations, police work has been identified as one of society's most stressful occupations (Alexander, 1999; Anshel, 2000; Paton & Violanti, 1999). This is particularly true for South African circumstances, where high levels of crime and violence are prevalent (Gulle, Tredoux & Foster, 1998; Marks, 1995; Nel & Burgers, 1996). Statistics regarding continuous exposure to violence, retirement as a result of stress-related psychological disorders as well as the high suicide rate in the South African Police Service (SAPS) are indicative that many police officers experience their circumstances as stressful and traumatic (Kopel & Friedman, 1999). It is important to have a productive and healthy police force that serves as an important contributor to the stability and economic growth of South Africa. It is therefore necessary to research areas that could possibly impact on the standard of police officers' services, one area being burnout and work engagement.

A great deal of research has been devoted to the understanding of factors contributing to burnout (Schaufeli & Greenglass, 2001). Possible factors that are considered to be the antecedents of burnout can be classified into biographical characteristics, personality characteristics, work related attitudes and work and organisational characteristics (Schaufeli & Enzmann, 1998). Among these factors, those referring to the work environment are particularly significant (Koniarek & Dudek, 1996; Leiter, 1990). Organisational stress is one such factor. There is considerable evidence that job stress influences the degree of burnout experienced (Burke, 1997; Greenglass, Burke & Konarski, 1998; Mills & Huebner, 1998).

Stress is defined in terms of a disruption of the equilibrium of the cognitive-emotional-environmental system by external factors (Lazarus & Folkman, 1984; McGrath, 1976). These external factors, traditionally called stressors, may also lead to an equilibrium of the cognitive and environmental system or a state of well-being, depending on the performance capacities, for example, the available coping resources within the individual at a given time (Demerouti, Bakker, Nachreiner & Schaufeli, 2001). Stress may be studied in terms of an organism's response to challenges and upsets in the environment. It can also be studied where characteristics of the environmental stimuli give rise to stress (stressors), which may themselves become the focus of the study. In the first case stress is treated as a dependent

variable, in the second it is treated as an independent variable (Cox, 1978). In this study stress is treated as an independent variable, or as a stimulus that is a possible cause of burnout. Burnout can be considered as a particular kind of prolonged job stress (Brill, 1984), or the outgrowth of chronic, ongoing stress.

Although police work is seen as a stressful occupation and a number of studies have examined stressors experienced by police officers, few studies have examined ways in which police officers cope with these stressors (Bishop, Tong, Diong, Enkelmann & Why, 2001). Coping behaviours are an important aspect in the stress process. Generally, the dynamic, self-perpetuating nature of burnout is emphasised in one way or another. It is assumed that either a positive or a negative feedback loop exists, depending on the way the individual copes with stress (Schaufeli & Enzmann, 1998). Inadequate coping resources and ineffective coping strategies strongly predispose a worker to burnout (Brill, 1984). When poor coping strategies are adopted (e.g. avoidance or mental/behavioural disengagement), burnout can develop (Brill, 1984; Schaufeli & Enzmann, 1998). However, when a successful coping strategy is followed (e.g. active problem solving), goals are achieved, professional efficacy is enhanced, and a sense of existential significance is fostered (Schaufeli & Enzmann, 1998).

Around the turn of the millennium a strong scientific interest in a new paradigm, called "positive psychology" (Seligman & Csikszentmihalyi, 2000) arose. In line with this perspective, the burnout concept has recently been supplemented and enlarged by its positive antitheses of work engagement (Maslach, Schaufeli & Leiter, 2001). It is important not to focus exclusively on the negative aspects of police work, but to study police officers' adaptation at work in a positive way (Hart, Wearing & Heady, 1995). One way to accomplish this is with the concept of work engagement.

Engagement is defined as an energetic state in which the employee is dedicated to excellent performance at work and is confident of his or her effectiveness (Schutte, Toppinen, Kalimo & Schaufeli, 2000). Only two studies could be found that include work engagement in a causal model. In their proposed Comprehensive Burnout and Engagement (COBE) model, Schaufeli and Bakker (2002) found that job resources exclusively predicted work engagement. Demerouti et al. (2001) also found that a lack of job resources was primarily related to disengagement.

Based on the above discussion, it is clear that job stressors and coping might be related to burnout and/or work engagement of police officers. However, no studies including these factors in a causal model of burnout or work engagement in South Africa were found in the literature. Therefore, the objective of this study was to develop and test causal models of burnout and work engagement, which includes job stress and coping.

Burnout, job stress and coping

Schaufeli and Enzmann (1998, p. 36) define burnout as "a persistent, negative, work-related state of mind in 'normal' individuals that is primarily characterised by exhaustion, which is accompanied by distress, a sense of reduced effectiveness, decreased motivation, and the development of dysfunctional attitudes and behaviours at work." Recently, Schaufeli, Leiter, Maslach and Jackson (1996) developed the Maslach Burnout Inventory – General Survey (MBI-GS), an adapted version of the original MBI for use outside the human services. Storm and Rothmann (in press) adapted the MBI-GS for use in the SAPS and found that it is a reliable and valid measuring instrument of burnout. The MBI-GS comprises three dimensions. Exhaustion refers to fatigue, but without direct reference to people as the source of those feelings. Cynicism reflects indifference or a distant attitude towards one's work in general, rather than towards recipients of one's service or personal relationships at work. Professional efficacy encompasses both social and non-social accomplishments at work.

Two major categories of potential stressors in police work often emerge in the literature (Alexander, 1999; Biggam, Power, MacDonald, Carcary & Moodie, 1997; Brown & Campbell, 1994). *Inherent police stressors* refer to events generally occurring in police work that have the potential to be psychologically or physically harmful, such as physical threat, violence, exposure to danger, crime and facing the unknown (Alexander, 1999; Kop et al., 1999). The second category is stress as a result of the nature of the *police organisation* and includes stressors such as management style, poor equipment, excessive paperwork, poor training and an inadequate salary (Kop et al., 1999; Stearns & Moore, 1990). Research findings have posited that organisational stressors are more prevalent than inherent stressors (Alexander, 1999).

According to Schaufeli and Enzmann (1998), organisational stressors can be divided into two groups, namely job demands and a lack of job resources. A factor analysis of the "Job Stress

Survey" (Spielberger & Vagg, 1999) in a sample of police officers showed that the factor "Administrative and Organisational Pressures" can be subdivided into two components: job pressure and lack of organisational support. Pienaar and Rothmann (in press) found similar results in a sample of police officers in the SAPS. Factor analysis with a varimax rotation of the items of the "Police Stress Inventory" identified three underlying factors: job demands, lack of resources and inherent police stressors. Job demands refer to those aspects of the job that require sustained physical or mental effort and are therefore associated with certain physiological and psychological costs (Demerouti et al., 2001). Job resources refer to those aspects of the job that may be functional in achieving work goals, reduce job demands at the associated physiological and psychological costs, and stimulate personal growth and development (Demerouti et al., 2001).

Leiter (1993) proposed a process model of burnout that assumes that job demands and resources are posited to be differentially associated with the three burnout dimensions. More specifically, Leiter (1991, 1993) found that job demands are more strongly related to exhaustion, while job resources are more strongly related to cynicism and professional efficacy. In a meta-analysis that included over 60 studies, Lee and Ashforth (1996) confirmed that the three dimensions of burnout are differentially related to job demands and resources. Their results revealed that job demands were strongly associated with exhaustion. Cynicism was associated with both resources and demands, although the correlations for resources were lower than for demands. Professional efficacy was largely uncorrelated to job demands and job resources. However, if significant correlations were found, these concerned job resources rather than demands.

These results are largely confirmed by other research findings. Using the MBI-GS, Taris, Schreurs and Schaufeli (1999) found that job demands were more strongly related to exhaustion than to cynicism or professional efficacy. Cynicism and professional efficacy were related to the resource variables. Peeters and Le Blanc (2001) found that organisational demands relate only to exhaustion. Fong (1993) found similar results. Janssen, Schaufeli and Houkes (1999) found that exhaustion is significantly and most strongly associated with job demands. Cynicism and professional efficacy were strongly associated with job resources, but not more so than exhaustion. Schaufeli and Enzmann (1998) analysed 27 published studies and found that job demands clearly correlate most strongly with exhaustion and least

with professional efficacy. They also found that professional efficacy shows a comparatively strong association with resources.

Based on the above discussion, it could be expected that job demands will be most strongly associated with exhaustion, where a lack of job resources will be associated with lower professional efficacy. Regarding police stressors, Burke (1993, 1997) found that police officers reporting less stimulation (fewer work stressors) in their jobs also reported greater depersonalisation and lesser feelings of personal accomplishment. Also, officers reporting a greater number of stressful work events reported greater feelings of personal accomplishment. Therefore, it seems as if inherent police stressors will be related to higher levels of professional efficacy.

Greenglass et al. (1998) state that an individual's burnout levels depend not only on stressful events in the work environment, but also on the availability of coping resources. Folkman, Lazarus, Gruen and DeLongis (1986, p. 572) define coping as "the person's cognitive and behavioural efforts to manage (reduce, minimise or tolerate) the internal and external demands of the person-environment transaction that is appraised as taxing or exceeding the person's resources". The theoretical framework of Aneshensel, Pearlin, Mullan, Zarit and Whitlach (1995) and Lutzky and Knight (1994) postulates a role for personality dispositions in predicting both coping strategies and well-being. Research in other areas has shown that personality dispositions influence one's choice of coping strategy (Bolger & Zuckerman, 1995; Saklofske & Kelly, 1995). Studies measuring coping dispositions have done so by instructing the participants to think about the ways in which they usually deal with stress (Carver, Scheier & Weintraub, 1989). The dispositional version of the Coping Orientation to Problems Experienced (COPE) scale (Carver et al., 1989) is one such inventory.

Coping resources are factors in place before a stressor occurs – factors that can be used to lessen the costs of dealing with stress (Wheaton, 1983). In the burnout literature, certain coping strategies have been associated with increased degrees of burnout, while other coping strategies have been found to be effective in lessening burnout. De Rijk, Le Blanc and Schaufeli (1998) argue that utilising active coping strategies buffers the effects of job stressors on negative job-related outcomes like burnout. This is confirmed by Duquette, Kerouac, Sandhu, Ducharme and Saulnier (1995) and Enzmann (1996), who found that active coping styles are associated with lower levels of burnout. More specifically, Anderson (2000)

found that when individuals used active coping strategies, feelings of cynicism lessened and their sense of professional efficacy increased. However, it did not save them from exhaustion. In a sample of pharmacists, Storm and Rothmann (in press) found that personal accomplishment (professional efficacy) was the only component of burnout associated with coping strategies. Active coping strategies were associated with higher levels of personal accomplishment.

Avoidance coping seems to be associated with higher levels of burnout. Thornton (1992) found that a combination of escapist and avoidance coping was related to increased levels of burnout. Anderson (2000) found that workers who used avoidance coping strategies more showed an increase in exhaustion. The results of Mitchell and Hastings (2001) showed that the use of disengagement coping strategies predicted both exhaustion and less positive feelings of professional efficacy. Chan and Hui (1995) observed that the use of avoidance coping was associated with all three dimensions of burnout. According to Schaufeli and Enzmann (1998), avoidance coping share about 5-10% of the variance of exhaustion and cynicism, where the relationship with personal accomplishment is weaker (less than 5%). Rohman (1987/1988) also found a positive relationship between avoidance coping and exhaustion and cynicism.

Folkman and Lazarus (1991) indicated that Seeking Social Support coping responses can function as both a problem-focused coping strategy and an emotion-focused coping strategy simultaneously. Therefore, a police officer in the process of seeking social support from a coworker can either solicit tangible information or emotional support (Patterson, 2000). Although emotion-focused coping strategies are often considered as ineffective (Chwalisz, Altmaier & Russel, 1992; Patterson, 1999), Zellars and Perrewé (2001) argue that emotion-focused strategies are multidimensional and have suffered from a negative reputation primarily as a result of their measurement. Their results provide empirical support for the valuable effect of emotional social support as an aid against all three dimensions. Others also suggested that emotional support could alleviate work stress and psychological strain (Carver et al., 1989; Cherniss, 1980). On the other hand, there is evidence that emotional social support may not always be very adaptive (Billings & Moos, 1984; Costanza, Derlega & Winstead, 1988).

In a sample of police officers in the SAPS, police members obtained the highest scores on turning to religion (focus on religion to facilitate emotional support) and planning (Rothmann & Van Rensburg, 2002). Turning to religion has been mentioned occasionally in previous research as a potential coping strategy (see Beehr, Johnson & Nieva, 1995). However, it has largely been ignored in coping with occupational stress. It seems as if the practice of religion in stressful times is associated with lower burnout scores (Hammons, 2000; Luton, 2000; Shaddock, Hill & Van Limbeek, 1998; Turnipseed, 1994). Johnson (2001) found that religious variables reached significance only on the cynicism scale, while Finley (2000) found that participants who expressed a religious affiliation experienced lower cynicism and more feelings of professional efficacy.

Based on the above discussion it seems reasonable to expect that 1) active coping will be associated with lower levels of cynicism and higher levels of professional efficacy; 2) avoidance coping will be positively related to exhaustion and cynicism and negatively related to professional efficacy; 3) seeking emotional support will have a negative relationship with exhaustion, cynicism and a positive relationship with professional efficacy; 4) turning to religion will have a positive influence on cynicism.

Research on the engagement concept has taken two different, but related, paths. Maslach and Leiter (1997) rephrased burnout as an erosion of engagement with the job and is characterised by energy, involvement and efficacy. Schaufeli and his colleagues define work engagement as a positive, fulfilling, work-related state of mind that is characterised by vigour, dedication and absorption (Schaufeli, Salanova, Gonzalez-Roma & Bakker, 2002).

Recently, Demerouti et al. (2001) successfully tested the Job Demands-Resources (JD-R) model. They found that job demands are primarily related to the exhaustion component of burnout, where lack of job resources are primarily related to disengagement. Schaufeli and Bakker (2002) tested their so-called Comprehensive Burnout and Engagement (COBE) model and found that burnout is mainly predicted by job demands, but also by lack of job resources, whereas work engagement is exclusively predicted by job resources. Based on this information, it is expected that job resources (rather than job demands) will predict work engagement.

The above discussion leads to the following hypotheses:

- H1: Job demands will be most strongly associated with exhaustion. Lack of resources will be associated with lower professional efficacy. Police stressors will be inversely related to higher levels of professional efficacy.
- H2: Active coping will be associated with lower levels of cynicism and higher levels of professional efficacy. Avoidance coping will be positively related to exhaustion and cynicism and negatively related to professional efficacy. Seeking emotional support will have a negative relationship with emotional exhaustion and depersonalisation, and a negative relationship with professional efficacy. Turning to religion will have a positive influence on cynicism.
- H3: Lack of resources will predict lower levels of work engagement.
- H4: Active coping, low avoidance, seeking emotional support and turning to religion will predict higher levels of work engagement.

METHOD

Research design

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

Study population

Random samples ($N = 1\ 910$) were taken from police stations in the Limpopo Province, Gauteng, Free State, Mpumalanga, Northern Cape, Western Cape, Eastern Cape and KwaZulu-Natal. The following formula proposed by Kerlinger and Lee (2000) was used to determine the sample size for this study:

$$n' = \frac{n}{1 + \frac{n}{N}}$$

and

$$n = z^2 \times \frac{SD^2}{d^2}$$

where n' = estimated sample size; n = the estimated sample size using the formula; N = the size of the population; z = standard score corresponding to the specified probability of risk; SD = the standard deviation of the population, and d = the specified deviation.

The values for z , SD and d have been determined based on previous studies of burnout in South Africa (Storm & Rothmann, in press). Stations were divided into small (fewer than 25 staff members), medium (25–100 staff members) and large stations (more than 100 staff members). All police members at randomly identified small and medium stations in each of the provinces were asked to complete the questionnaires. In the large stations stratified random samples were taken according to sex and race. Table 1 presents some of the characteristics of the participants.

Table 1
Characteristics of the Participants

Item	Category	Percentage
Race	White	39,27
	Black	40,37
	Coloured	16,02
	Indian	4,35
Rank	Constable	7,02
	Sergeant	19,58
	Captain	16,86
	Inspector	51,83
	Senior Superintendent	2,83
	Other	1,88
	Province	Gauteng
	Mpumalanga	9,11
	Limpopo Province	9,11
	Kwazulu Natal	12,30
	Free State	16,49
	Eastern Cape	13,66
	Northern Cape	10,42
	Western Cape	17,28
Size of station	Small	31,26
	Medium	38,90
	Large	29,84
Education	Grade 10	10,99
	Grade 11	4,97
	Grade 12	56,23
	Technical college diploma	2,77
	Technikon diploma	20,68
	University degree	2,15
	Postgraduate degree	2,20
Gender	Male	80,10
	Female	19,90
Marital status	Single	19,48
	Married	54,08
	Divorced	23,09
	Separated	2,09
	Remarried	1,26

The sample was mostly male (80,10%), married, and had a high school education. The mean age of participants was 34,55 years, while the mean length of work experience was 12,98 years.

Measuring battery

The following measurement instruments were used in the empirical study:

The *Maslach Burnout Inventory-General Survey* (MBI-GS) (Schaufeli et al., 1996) was used to measure burnout. The MBI-GS has three subscales: Exhaustion (Ex), Cynicism (Cy) and Professional Efficacy (PE). Internal consistencies (Cronbach coefficient alphas) reported by Schaufeli et al. (1996) varied from 0,87 to 0,89 for Exhaustion, 0,73 to 0,84 for Cynicism and 0,76 to 0,84 for Professional Efficacy. Test-retest reliabilities after one year were 0,65 (Exhaustion), 0,60 (Cynicism) and 0,67 (Professional Efficacy) (Schaufeli et al., 1996). All items are scored on a 7-point frequency rating scale ranging from 0 ("never") to 6 ("daily"). High scores on Ex and Cy, and low scores on PE are indicative of burnout. Storm and Rothmann (in press) confirmed the 3-factor structure of the MBI-GS in a sample of 2 396 SAPS members, but recommended that Item 13 should be dropped from the questionnaire. They also confirmed the structural equivalence of the MBI-GS for different race groups in the SAPS. The following Cronbach alpha coefficients were obtained for the MBI-GS: Exhaustion: 0,88; Cynicism: 0,79; Professional Efficacy: 0,78 (Storm & Rothmann, in press).

The *Utrecht Work Engagement Scale* (UWES) (Schaufeli et al., 2002) was used to measure the levels of engagement of the participants. The UWES includes three dimensions, namely vigour, dedication and absorption. The UWES is scored on a seven-point frequency rating scale, varying from 0 (never) to 6 (always) and include questions like "I am bursting with energy every day in my work"; "Time flies when I am at work" and "My job inspires me". The alpha coefficients for the three sub-scales varied between 0,68 and 0,91. The alpha coefficient could be improved (α varies between 0,78 and 0,89 for the three sub-scales) by eliminating a few items without substantially decreasing the scale's internal consistency. Storm and Rothmann (in press) obtained the following alpha coefficients for the UWES in a sample of 2 396 members of the SAPS: Vigour: 0,78; Dedication: 0,89; Absorption: 0,78.

The *Police Stress Inventory* (PSI) was used to measure job stress. Pienaar and Rothmann (in press) constructed the PSI for police officers in the SAPS based on the findings of several investigations regarding stressors specific to the policing environment. The PSI is scored on a nine-point frequency and intensity rating scale, varying from 0 ("low") to 9 ("high"). Factor analysis with a varimax rotation of the items identified three underlying factors, namely job

demands, lack of resources and inherent police stressors. Pienaar and Rothmann (in press) found acceptable internal consistencies for the PSI (Job Demands: $\alpha = 0,92$; Lack of Resources: $\alpha = 0,92$; Police Stressors: $\alpha = 0,89$).

The *COPE Questionnaire* (COPE) was used to measure participants' coping strategies. The COPE is a multidimensional 53-item coping questionnaire that indicates the different ways people cope in different circumstances (Carver et al., 1989). Although the original questionnaire measures 13 different coping strategies, Pienaar and Rothmann (in press) subjected the COPE to a principal components factor analysis with a varimax rotation. Three internally consistent factors were extracted, namely Active Coping (16 items), Avoidance (13 items), Seeking Emotional Support (7 items) and Turning to Religion (3 items). The alpha coefficients of the three scales are 0,92, 0,86, 0,80 and 0,83 respectively. All these values are acceptable ($\alpha > 0,70$, Nunnally & Bernstein, 1994), and thus indicate the internal consistency of the factors of the COPE. Test-retest reliability varies from 0,46 to 0,86 and from 0,42 to 0,89 (applied after two weeks).

Statistical analysis

The statistical analysis was carried out with the help of the SAS program (SAS Institute, 2000). Principal factor extraction with varimax rotation was performed through SAS FACTOR on the items of the MBI-GS, UWES, PSI and COPE before performing structural equation modelling. Principal components extraction was used prior to principal factors extraction to estimate the number of factors, presence of outliers and factorability of the correlation matrices. Furthermore, the oblique method with a promax rotation was used to determine the interfactor correlations of each measuring instrument. If correlations higher than 0,30 were found, this method was used to extract the factor structure.

Cronbach alpha coefficients and inter-item correlations were used to assess the internal consistency of the measuring instruments (Clark & Watson, 1995). Coefficient alpha conveys important information regarding the proportion of error variance contained in a scale. According to Clark and Watson (1995), the average inter-item correlation coefficient (which is a straightforward measure of internal consistency) is a useful index to supplement information supplied by coefficient alpha. However, unidimensionality of a scale cannot be

ensured simply by focusing on the mean inter-item correlation – it is necessary to examine the range and distribution of these correlations as well.

The level of statistical significance was set at $p \leq 0,05$. Effect sizes were used to decide on the significance of the findings. Pearson product-moment correlation coefficients were used to specify the relationships between the variables. A cut-off point of 0,30 (medium effect, Cohen, 1988) was set for the practical significance of correlation coefficients.

Canonical correlation was used to determine the relationships between the dimensions of burnout, work engagement, job stress and coping. The goal of canonical correlation is to analyse the relationship between two sets of variables (Tabachnick & Fidell, 2001). Canonical correlation is considered a descriptive technique rather than a hypothesis-testing procedure.

Structural equation modelling (SEM) methods as implemented by AMOS (Arbuckle, 1997) were used to construct a causal model of burnout. SEM is a statistical methodology that takes a confirmatory (i.e. hypothesis-testing) approach to the analysis of a structural theory bearing on some phenomenon (Byrne, 2001). A structural equations approach allows a model to be stipulated in advance of the data being examined. The model may then be tested for its goodness of fit to the covariance matrix of the measured variables, using a number of testing procedures. Competing models may also be tested, and decisions made about the model which is most appropriate for the data set (Deary et al., 1996).

Hypothesised relationships are tested empirically for goodness of fit with the sample data. The χ^2 statistic and several other goodness-of-fit indices summarise the degree of correspondence between the implied and observed covariance matrices. Jöreskog and Sörborn (1993) suggest that the χ^2 value may be considered more appropriately as a badness-of-fit rather than as a goodness-of-fit measure in the sense that a small χ^2 value is indicative of good fit. However, because the χ^2 statistic equals $(N - 1)F_{\min}$, this value tends to be substantial when the model does not hold and the sample size is large (Byrne, 2001). A large χ^2 relative to the degrees of freedom indicates a need to modify the model to better fit the data. Researchers have addressed the χ^2 limitations by developing goodness-of-fit indexes that take a more pragmatic approach to the evaluation process. One of the first fit statistics to

address this problem was the χ^2 /degrees of freedom ratio (CMIN/DF) (Wheaton, Muthén, Alwin & Summers, 1977). These criteria, commonly referred to as "subjective" or "practical" indexes of fit, are typically used as adjuncts to the χ^2 statistic.

The Goodness-of-Fit-Index (GFI) indicates the relative amount of the variances/co-variances in the sample predicted by the estimates of the population. It usually varies between 0 and 1 and a result of 0,90 or above indicates a good model fit. In addition, the Adjusted Goodness-of-Fit Index (AGFI) is given. The AGFI is a measure of the relative amount of variance accounted for by the model, corrected for the degrees of freedom in the model relative to the number of variables. The GFI and AGFI can be classified as absolute indexes of fit because they basically compare the hypothesised model with no model at all (Hu & Bentler, 1995). Although both indexes range from zero to 1,00, the distribution of the AGFI is unknown, therefore no statistical test or critical value is available (Jöreskog & Sörbom, 1986). The Parsimony Goodness-of-Fit Index (PGFI) addresses the issue of parsimony in SEM (Mulaik et al., 1989). The PGFI takes into account the complexity (i.e., number of estimated parameters) of the hypothesised model in the assessment of overall model fit and provides a more realistic evaluation of the hypothesised model. Mulaik et al. (1989) suggested that indices in the 0,90's accompanied by PGFI's in the 0,50's are not unexpected, however, values > 0,80 are considered to be more appropriate (Byrne, 2001).

The Normed Fit Index (NFI) is used to assess global model fit. The NFI represents the point at which the model being evaluated falls on a scale running from a null model to perfect fit. This index is normed to fall on a 0 to 1 continuum. Marsh, Balla and Hau (1996) suggest that this index is relatively insensitive to sample sizes. The Comparative Fit Index (CFI) represents the class of incremental fit indices in that it is derived from the comparison of a restricted model (i.e., one in which structure is imposed on the data) with that of an independence (or null) model (one in which all correlations among variables are zero) in the determination of goodness-of-fit. The Tucker-Lewis Index (TLI) (Tucker & Lewis, 1973) is a relative measure of covariation explained by the model that is specifically developed to assess factor models. For these fit indices (NFI, CFI and TLI), it is more or less generally accepted that a value less than 0,90 indicates that the fit of the model can be improved (Hoyle, 1995), although a revised cut-off value close to 0,95 has recently been advised (Hu & Bentler, 1999).

To overcome the problem of sample size, Browne and Cudeck (1993) suggested using the Root Mean Square Error of Approximation (RMSEA) and the 90% confidence interval of the RMSEA. The RMSEA estimates the overall amount of error; it is a function of the fitting function value relative to the degrees of freedom. The RMSEA point estimate should be 0,05 or less and the upper limit of the confidence interval should not exceed 0,08 (Hu & Bentler (1999) suggested a value of 0,06 to be indicative of good fit between the hypothesised model and the observed data). MacCallum, Browne and Sugawara (1996) recently elaborated on these cut-off points and noted that RMSEA values ranging from 0,08 to 0,10 indicate mediocre fit, and those greater than 0,10 indicate poor fit.

A stepwise multiple regression analysis was conducted for work engagement to determine the percentage of variance in the dependent variable (work engagement) that is predicted by the independent variables (job stress and coping). The effect size (which indicates practical significance) in the case of multiple regression is given by the following formula (Steyn, 1999):

$$f^2 = R^2 / 1 - R^2$$

A cut-off point of 0,10 (medium effect) (Steyn, 1999) was set for the practical significance of f^2 .

RESULTS

Table 2 shows the descriptive statistics, the Cronbach alpha coefficients and the mean inter-item correlation coefficients of the MBI, UWES, PSI and COPE.

Table 2

Descriptive Statistics, Alpha Coefficients And Inter-Item Correlations of the MBI, UWES, PSI and COPE

Item	Mean	SD	Skewness	Kurtosis	$r(\text{Mean})$	α
MBI-GS						
EX	11,16	7,93	0,52	-0,58	0,58	0,87
CY	7,89	6,11	0,67	-0,25	0,48	0,78
PE	26,78	7,98	-1,14	1,10	0,40	0,80
UWES						
VI	21,00	6,27	-0,69	0,20	0,43	0,79
DE	22,72	6,80	-0,98	0,43	0,63	0,89
AB	20,72	6,35	-0,61	0,04	0,42	0,78
Total	56,10	16,10	-0,88	0,49	0,50	0,93
PSI						
Job demands	56,64	19,53	-0,14	-0,41	0,40	0,89
Lack of resources	62,45	19,45	-0,42	-0,29	0,46	0,90
Police stressors	33,62	13,34	-0,40	-0,87	0,55	0,88
COPE						
Active coping	21,02	4,46	-0,70	0,47	0,39	0,82
Avoidance	15,05	4,60	0,40	-0,28	0,32	0,77
Seeking Emotional Support	11,37	3,35	-0,47	-0,64	0,51	0,81
Turning to religion	9,11	2,52	-0,68	-0,37	0,58	0,80

The scores on the MBI-GS, UWES, PSI and COPE are normally distributed. The Cronbach alpha coefficients of all the measuring instruments are considered to be acceptable compared to the guideline of $\alpha > 0,70$ (Nunnally & Bernstein, 1994). Furthermore, with few exceptions, the inter-item correlations are considered acceptable compared to the guideline of $0,15 < r < 0,50$ (Clark & Watson, 1995). It appears that the MBI-GS, UWES, PSI and COPE have acceptable levels of internal consistency.

The product-moment correlation coefficients between the MBI-GS, UWES, PSI and COPE are reported in Table 3.

Table 3

Product-moment Correlation Coefficients between the MBI, the UWES, the PSI and the COPE

Item	1	2	3	4	5	6	7	8	9	10	11	12
1. Exhaustion	-	-	-	-	-	-	-	-	-	-	-	-
2. Cynicism	0,61**	-	-	-	-	-	-	-	-	-	-	-
3. Professional Efficacy	0,06	-0,03	-	-	-	-	-	-	-	-	-	-
4. Vigour	-0,28	-0,34*	0,26	-	-	-	-	-	-	-	-	-
5. Dedication	-0,32*	-0,42*	0,26	0,80**	-	-	-	-	-	-	-	-
6. Absorption	-0,20	-0,26	0,21	0,79**	0,77**	-	-	-	-	-	-	-
7. Job Demands	0,44*	0,33*	0,09	-0,16	-0,14	-0,09	-	-	-	-	-	-
8. Lack of Resources	0,38*	0,25	0,28	-0,08	-0,10	-0,04	0,66**	-	-	-	-	-
9. Police Stressors	0,22	0,10	0,24	-0,01	-0,04	-0,00	0,48*	0,59**	-	-	-	-
10. Active Coping	-0,04	-0,09	0,29	0,33*	0,34*	0,29	0,06	0,15	0,15	-	-	-
11. Avoidance Coping	0,29	0,34*	-0,18	-0,08	-0,08	-0,00	0,28	0,08	0,06	0,11	-	-
12. Emotional Support	-0,08	-0,07	0,13	0,21	0,27	0,20	0,04	0,00	0,03	0,51**	0,22	-
13. Turning to Religion	-0,01	-0,04	0,12	0,20	0,20	0,20	0,09	0,08	0,09	0,40*	0,16	0,38*

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

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

As can be seen in Table 3, Exhaustion is practically significantly related to Job Demands and Lack of Resources. Cynicism is practically significantly related to Job Demands and Avoidance. Vigour and Dedication are both practically significantly related to Active Coping.

Table 3 also shows that Exhaustion and Cynicism are practically significantly related (large effect). The three engagement scales are also practically significantly related with each other (large effects). It seems as if Exhaustion is practically significantly (negatively) related with Dedication, while Cynicism is negatively related to Vigour and Dedication. Job Demands is practically significantly related with Lack of Resources (large effect) and Police Stressors (medium effect), and Lack of Resources and Police Stressors are also practically significantly related (large effect). It seems as if Active Coping and Seeking Emotional Support are practically significantly related (large effect), as well as Active Coping and Turning to Religion (medium effect). Seeking Emotional Support and Turning to Religion are also practically significantly related to each other (medium effect).

Canonical correlation using SAS CANCELL was performed between a set of job stressors, coping strategies and burnout. Shown in the table are correlations between the variables and

canonical variates, standardised canonical variate coefficients, within-set variance accounted for by the canonical variates (percent of variance), redundancies and canonical correlations.

The results of the canonical analysis of job stressors, coping strategies and burnout are shown in Table 4. The first set included Job Stress (Job Demands, Lack of Resources and Police Stressors) and coping strategies (Active Coping, Avoidance Coping, Seeking Emotional Support and Turning to Religion). The second set included Exhaustion, Cynicism and Professional Efficacy.

Table 4
Results of the Canonical Analysis: Job Stress, Coping and Burnout

	First Canonical Variate		Second Canonical Variate		Third Canonical Variate	
	Correlation	Coefficient	Correlation	Coefficient	Correlation	Coefficient
Set 1: Stress and Coping						
Job Demands	0,67	0,45	0,56	0,11	-0,33	-0,85
Lack of Resources	0,41	0,21	0,86	0,63	0,10	0,87
Police Stressors	0,15	-0,17	0,67	0,19	-0,28	-0,43
Active Coping	-0,31	-0,32	0,52	0,43	0,38	0,16
Avoidance Coping	0,70	0,70	-0,13	-0,32	0,44	0,56
Seeking Emotional Support	-0,23	-0,22	0,18	0,01	0,49	0,43
Turning to Religion	-0,12	-0,07	0,23	0,02	0,02	-0,30
Percent of variance	0,18		0,27		0,11	Total = 0,56
Redundancy	0,06		0,06		0,00	Total = 0,12
Set 2: Burnout						
Exhaustion	0,84	0,58	0,47	0,50	-0,27	-1,01
Cynicism	0,82	0,46	0,14	-0,14	0,55	1,17
Professional Efficacy	-0,35	-0,38	0,90	0,87	0,24	0,34
Percent of variance	0,50		0,35		0,14	Total = 0,99
Redundancy	0,16		0,07		0,00	Total = 0,23
Canonical correlation	0,56		0,46		0,10	

The first canonical correlation was 0,56 (32% overlapping variance); the second was 0,46 (21% overlapping variance); the third was 0,10 (1% overlapping variance). With all three canonical correlations included, $F(21, 5456) = 64,05$, $p < 0,0001$ for the first canonical correlation; $F(12, 3802) = 42,10$, $p < 0,0001$ for the second canonical correlation and $F(5, 1902) = 4,18$, $p < 0,0009$ for the third canonical correlation. Data on the three canonical variates appear in Table 4. Total percentage of variance and total redundancy indicate that the

first and second pair of canonical variates were moderately related, but the third pair was only somewhat related; interpretation of the third pair is questionable.

With a cut-off correlation of 0,30 the variables in the job stress and coping set that correlated with the first canonical variate were Job Demands, Lack of Resources, Active Coping and Avoidance Coping. Among the burnout variables, Exhaustion, Cynicism and Professional Efficacy correlated with the first canonical variate. The first pair of canonical variates shows that job demands (0,67), lack of resources (0,41), low active coping (-0,31) and avoidance coping (0,70) are associated with exhaustion (0,84), cynicism, (0,82) and low professional efficacy (-0,35).

Variables in the job stress and coping set that correlated with the second canonical variate were Job Demands, Lack of Resources, Police Stressors and Active Coping. Among the burnout variables, Exhaustion and Professional Efficacy correlated with the second canonical variate. The second pair of canonical variates indicates that job demands (0,57), lack of resources (0,86), police stressors (0,67) and active coping (0,52) are associated with exhaustion (0,47) and professional efficacy (0,90).

The variables in the job stress and coping set that correlated with the third canonical variate were Job Demands, Active Coping, Avoidance and Seeking Emotional Support. Among the burnout variables, Cynicism correlated with the third canonical variate. The third pair of canonical variates indicates that low job demands (-0,33), active coping (0,38), avoidance (0,44) and seeking emotional support (0,49) are associated with cynicism (0,55).

A more comprehensive test of the hypothesised relationships can be accomplished with structural equation modelling (SEM) methods as implemented by AMOS (Arbuckle, 1997). Data analyses proceeded as follows: Based on the results of the canonical correlations, lacking associations between job stress, coping and burnout were not included in the subsequent SEM analysis. A model was constructed based upon the results of the canonical correlations and the consensus of findings from a review of the burnout literature, as it bears on the police profession.

Next, the manner by which each of the constructs in the model is to be measured was established by the combination of particular items for each variable in the model. The manner

by which each of the constructs in this model is to be measured is by multiple indicators of each construct through the judicious combinations of particular items. As such, items were carefully grouped according to content and factor loadings in order to equalise the measurement weighting across indicators. The following scales were used: Exhaustion (3 items, $\alpha = 0,81$), Cynicism (3 items, $\alpha = 0,80$), Professional Efficacy (3 items, $\alpha = 0,72$), Job Demands (3 items, $\alpha = 0,75$), Lack of Resources (3 items, $\alpha = 0,76$), Active Coping (3 items, $\alpha = 0,72$), Avoidance (4 items, $\alpha = 0,70$), and Seeking Emotional Support (3 items, $\alpha = 0,78$).

The fit of the hypothetical model was assessed by 1) a quick overview of the overall χ^2 value, together with its degrees of freedom and probability value; 2) global assessments of model fit based on several goodness-of-fit statistics (GFI, AGFI, PGFI, NFI, TLI, CFI and RMSEA). Given findings of an ill-fitting initially hypothesised model, possible misspecifications as suggested by the so-called modification indexes were looked for and eventually a revised, re-specified model was fitted to the data.

The hypothesised model

The formulation of the hypothesised model is shown in Figure 1. As can be seen, burnout is represented as a multidimensional construct with Exhaustion, Cynicism and Professional Efficacy operating as conceptually distinct factors. The paths leading from the Job Stress (Job Demands and Lack of Resources) and Coping (Active, Avoidance and Seeking Emotional Support) variables to the three dimensions of burnout reflect findings in the literature.

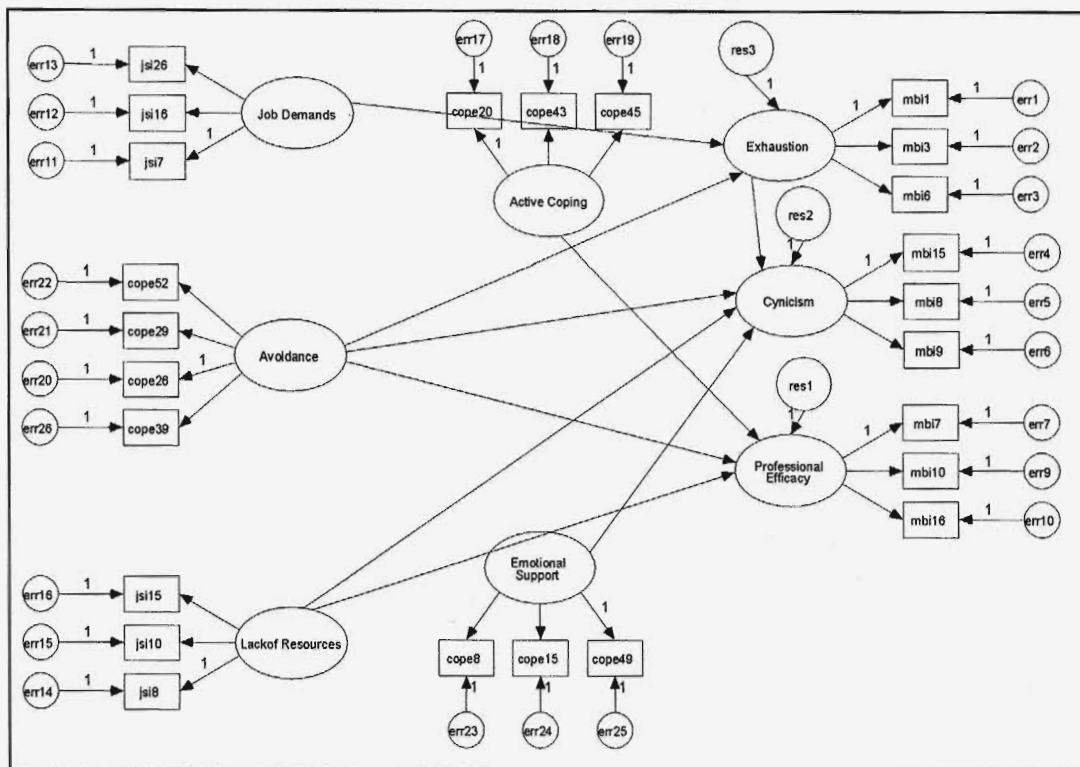


Figure 1. The hypothesised model of job stress, coping and burnout

Selected goodness-of-fit statistics related to the hypothesised model (Model 1) are presented in Table 5.

Table 5
Goodness-of-Fit Statistics for the Hypothesised Model

Model	χ^2	χ^2/df	GFI	AGFI	PGFI	NFI	TLI	CFI	RMSEA
Default model	2 392,55	9,00	0,92	0,90	0,75	0,85	0,85	0,86	0,07

As can be seen in Table 5, the overall statistical χ^2 value ($df = 266$; $p = 0,00$) is 2 392,55. Given the known sensitivity of this statistic to sample size (Jöreskog & Sörbom, 1993), use of the χ^2 index provides little guidance in determining the extent to which the model does not fit. Therefore it is more beneficial to rely on the other indexes of fit (Byrne, 2001). However, the hypothesised model (Model 1) was also not good from this perspective. The PGFI value lower than 0,80, NFI, TLI and CFI values lower than 0,95 and RMSEA value higher than 0,05 are indicative of failure to confirm the hypothesised model. Thus it is apparent that some

modification in specification is needed in order to determine a model that better represents the sample data.

Post hoc analyses

A review of the modification indices (MIs) reveals some evidence of misfit in the model. Parameters that represent the structural paths in the model as well as covariances between factors are the only MIs of interest. Based on the regression weights and the meaningfulness and influential flow, Model 1 was re-estimated with additional paths between Active Coping and Exhaustion, Seeking Emotional Support and Exhaustion, Lack of Resources and Exhaustion, Seeking Emotional Support and Professional Efficacy and between Active Coping and Cynicism. Additionally, covariances were allowed between Active Coping and Avoidance, Active Coping and Seeking Emotional Support, Avoidance and Seeking Emotional Support and Lack of Resources and Job Demands.

Results related to this re-specified model (subsequently labelled as Model 2) are presented in Table 6.

Table 6

Goodness-of-Fit Statistics for Model 2

Model	χ^2	χ^2/df	GFI	AGFI	PGFI	NFI	TLI	CFI	RMSEA
Default model	822,86	3,21	0,97	0,96	0,76	0,95	0,96	0,96	0,03

Estimation of Model 2 yielded an overall χ^2 value ($df = 256; p = 0,00$) of 822,86. Although the χ^2 value ($df = 85; p = 0,00$) is still high, it is considerably lower than in Model 1. The χ^2 difference between Models 1 and 2 was statistically significant ($\Delta\chi^2_{(1)} = 1\ 569,69$). All the other fit statistics indicate excellent fit of the measurement model to the data. Furthermore, no MIs associated with structural paths were present in the output, only MIs related to covariances were present, but no values suggestive of model misfit. Taking these factors into account, no further consideration was given to the inclusion of additional parameters.

Model parsimony

Thus far, the discussion related to model fit has considered only the addition of parameters to the model. However, also important regarding model fit is the extent to which certain initially hypothesised paths may be irrelevant to the model. One way of determining such irrelevancy is to examine the statistical significance of all structural parameter estimates (Byrne, 2001). In reviewing the structural parameter estimates for Model 2, four parameters are nonsignificant. These parameters represent the paths from Seeking Emotional Support to Cynicism (C.R. = -0,16), Lack of Resources to Cynicism (C.R. = -2,20), Cynicism to Professional Efficacy (C.R. = -1,76) and Seeking Emotional Support to Professional Efficacy (C.R. = 1,22). In the interest of parsimony, a final model of burnout was estimated with these four structural paths deleted from the model. The results of the final model (Model 3) is presented in Table 7.

Table 7
Goodness-of-Fit Statistics for Model 3

Model	χ^2	χ^2/df	GFI	AGFI	PGFI	NFI	TLI	CFI	RMSEA
Default model	832,51	3,20	0,97	0,97	0,77	0,95	0,96	0,96	0,03

Estimation of the final model (Model 3) resulted in an overall χ^2 value ($df = 256; p = 0,00$) of 822,86. As can be seen in Table 7, there is a slight erosion in model fit from $\chi^2_{(256)} = 822,86$ for Model 2, to $\chi^2_{(260)} = 832,51$ for Model 3. However, with deletion of any parameters from a model, such a change is to be expected (Byrne, 2001). The important aspect of this change in model fit is that the χ^2 difference between the two models is not significant ($\Delta\chi^2_{(3)} = 9,65$). Furthermore, the values for the other goodness-of-fit statistics remained virtually unchanged from those related to Model 2. A schematic representation of this final model of burnout for police officers in the SAPS is displayed in Figure 2.

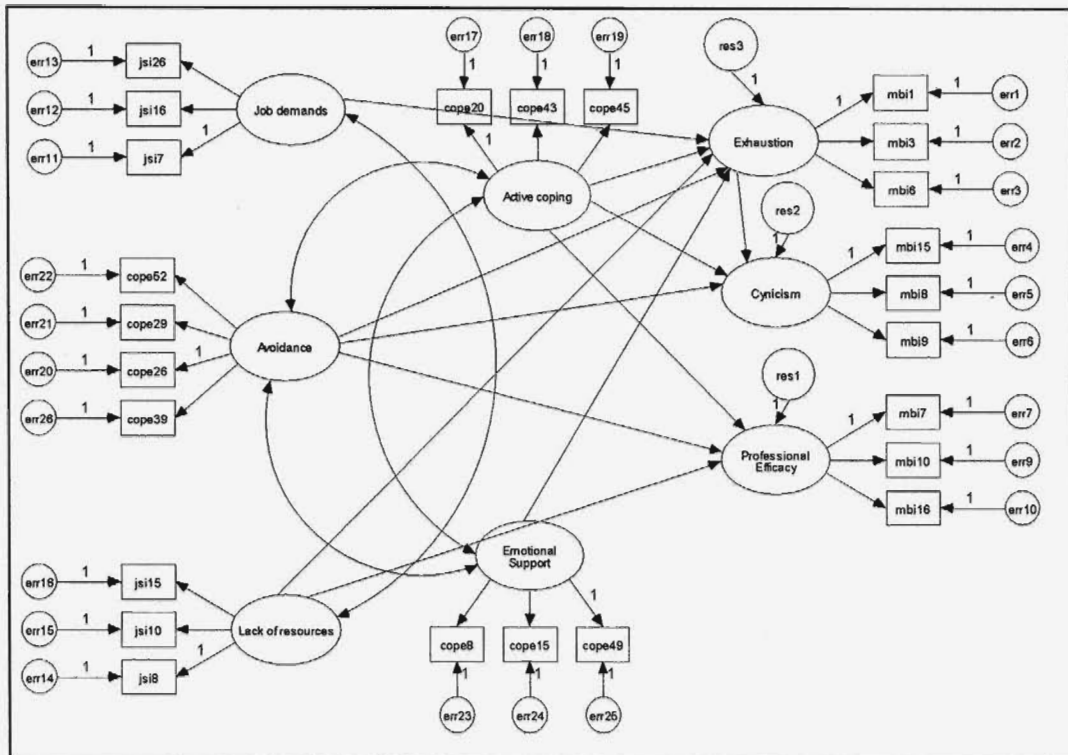


Figure 2. The final model of job stress, coping and burnout

A stepwise multiple regression analysis was conducted to determine the proportion of variance in work engagement (as measured by the UWES) that is predicted by job stress (as measured by the PSI) and coping (as measured by the COPE). A significant level of $p < 0,05$ was set. Storm and Rothmann (in press) found that a one-factor model fitted the data better than the revised three-factor model. Therefore, work engagement was assessed as a unidimensional construct.

The results of the regression analysis with job stress (as measured by the PSI) and coping (as measured by the COPE) as independent variables and work engagement (as measured by the UWES) as dependent variable are shown in Table 8.

Table 8

Regression Analysis, Job Stress, Coping and Work Engagement of Police Officers

ANALYSIS OF VARIANCE				
	Source of variance	Degrees of freedom	Sum of squares	Mean square
$R = 0,42$	Regression	6	88 191	14 699
$R^2 = 0,18$	Residual	1 903	406 835	213,79
$F = 68,75$ $f^2 = 0,22$				
VARIABLES IN THE EQUATION				
Independent Variables	Parameter	Standard error	F	p
Constant variable	37,75	2,04	343,53	0,00
Job demands	-0,07	0,02	8,01	0,00
Lack of resources	-0,07	0,02	8,08	0,00
Active coping	1,06	0,10	121,01	0,00
Avoidance	-0,45	0,08	31,32	0,00
Seeking Emotional Support	0,52	0,12	17,49	0,00
Turning to Religion	0,55	0,15	12,82	0,00

Table 8 shows that approximately 18% of the variance in Work engagement is predicted by job stress (as measured by the JSI) and coping (as measured by the COPE). The multiple correlation coefficient of 0,42 is practically significant (medium effect) ($f^2 = 0,22$). It seems as if Job Demands, Lack of Resources, Active Coping, Avoidance, Seeking Emotional Support and Turning to Religion explain approximately 18% of the variance in Work engagement. Therefore, these variables are the best predictors of work engagement in police officers.

Based on the results in Table 8, the regression equation for Work engagement could be written as follows: Work engagement = 37,75 – 0,07 (Job Demands) – 0,07 (Lack of Resources) + 1,06 (Active Coping) – 0,45 (Avoidance) + 0,52 (Seeking Emotional Support) + 0,55 (Turning to Religion).

Based on these results, partial support was found for Hypotheses 1, 2 and 3. Furthermore, these results provide support for Hypotheses 4.

SEM was also performed on the work engagement construct. However, the solution was somewhat problematic. More specifically, an error message in the output warned that the

covariance matrix among the factors was not positive definite; as a consequence, the solution was considered to be inadmissible.

DISCUSSION

The analysis of Pearson correlations in this study showed that job demands and lack of resources are positively related to exhaustion. Job demands and avoidance coping were positively related to cynicism. No significant relationships were found between job stress or coping and professional efficacy.

The results of the canonical correlations showed that high job demands, lack of resources and avoidance coping and low active coping were associated with higher exhaustion and cynicism and lower professional efficacy. Furthermore, high job demands, lack of resources, police stressors and active coping were associated with higher exhaustion, but primarily with higher professional efficacy. Also, low demands and high active coping, avoidance and seeking emotional support were associated with higher cynicism.

The structural equation analysis showed that all the variables in the model were associated with exhaustion. Police officers who experience high job demands (i.e. meeting deadlines, making critical on-the-spot decisions and dealing with crisis situations) and a lack of resources (i.e. insufficient personnel to help them handle an assignment, inadequate or poor quality equipment and lack of recognition for good work) experience higher exhaustion. Furthermore, when police officers used avoidance coping strategies, they showed an increase in exhaustion. However, when they used active coping strategies (such as making a plan of action or concentrate their efforts on doing something about the problem) and utilised their emotional support from friends or relatives (for example discussing their feelings with someone), their level of exhaustion decreased.

Regarding cynicism, the use of active coping strategies decreased feelings of cynicism, while the use of avoidance increased those feelings. Interestingly, job demands and/or a lack of resources was not related to cynicism. This is in contrast to other research findings (e.g. Lee & Ashfort, 1996; Leiter, 1991, 1993; Taris et al., 1999). A possible explanation could be that job demands and lack of resources influenced cynicism through exhaustion. In the SEM model, it is clear that feelings of exhaustion lead to cynicism. This is also consistent with the

model of developmental sequence of the three dimensions as has been proposed by Leiter and Maslach (1988). They suggest that exhaustion should appear first as chronic excessive work demands drain individuals' emotional resources. As a coping strategy, cynicism develops because individuals limit their involvement with others and their work. Also, in the SEM no path was allowed between cynicism and professional efficacy. This is also consistent with Leiter (1993), who believes that professional efficacy develops largely independently of exhaustion and cynicism. Therefore, it could be argued that high job demands and a lack of resources lead to higher feelings of exhaustion, which in turn lead to higher levels of cynicism. It is possible that exhaustion leads to cynicism, which in turn affects coping strategies (i.e. non-active coping and avoidance). However, because of the shortcomings in the research design (i.e. the cross-sectional nature thereof), it is not possible to determine the exact direction of the obtained relationships.

A lack of resources leads to lower levels of professional efficacy. This supports the findings of Leiter (1991, 1993), Taris et al., (1999) and Schaufeli and Enzmann (1998). Also, the use of active coping strategies leads to higher feelings of professional efficacy, where the use of avoidance as a coping strategy leads to lower feelings of accomplishment in the officers' work.

Regarding work engagement, the results of the Pearson correlations showed that only active coping is positively related to vigour and dedication. No significant relationships were found between job stress, coping and the other dimensions of work engagement. SEM was also performed on the work engagement construct. However, the solution was somewhat problematic. More specifically, an error message in the output warned that the covariance matrix among the factors was not positive definite; as a consequence, the solution was considered to be inadmissible. These problems experienced with the UWES provide further evidence for the concerns expressed by Storm and Rothmann (in press) that thorough psychometric evaluations of this instrument is needed before it can be used in our specific national context.

A stepwise multiple regression analysis was conducted to determine the proportion of variance in work engagement that is predicted by job stress and coping. It seems as if work engagement is predicted by active coping strategies (12,35%), low job demands (2,68%), lesser use of avoidance coping strategies (1,04%), seeking emotional support (0,85%),

turning to religion (0,56%) and lower lack of resources (0,35%). It seems as if active coping and job demands are the major predictors of work engagement. This is in contrast to the findings of Schaufeli and Bakker (2002) and Demerouti et al. (2001). This may be because the items regarding resources were negatively formulated.

In conclusion, the findings regarding job demands and resources are consistent with several other research findings. Job demands are associated with higher exhaustion, whereas a lack of resources is associated with higher exhaustion and lower professional efficacy. It seems as if demands and resources can influence cynicism through the experiencing of exhaustion. In contrast with other research results, job demands seem to be associated with disengagement.

Police stressors inherent to police work did not seem to play a very significant role in the levels of burnout or work engagement. This supports the findings of previous police studies that emphasise the importance of organisational stressors compared to police stressors (Alexander 1999; Biggam et al., 1997; Brown & Campbell, 1994; Kop et al., 1999). Furthermore, such a finding is convergent with earlier studies on the impact of job-specific stressors on health and well-being. Peeters, Schaufeli and Buunk (1995) found that stressors that are typical for a particular profession (e.g. dealing with victims of accidents for police officers) are appraised as least significant. A possible explanation for these findings could be that employees expect that some stressors are indissolubly connected with their profession, and as a result of this they do not perceive them to be very significant (Peeters & Le Blanc, 2001).

The use of active coping strategies seems to play a significant role in the burnout and work engagement levels of police officers. Officers using active coping methods are less prone to experience cynicism and lack of professional efficacy and are likely to be more engaged in their work. Therefore, it seems as if active coping strategies buffer the effects of job stressors on burnout (and especially developing cynicism and low professional efficacy) (De Rijk et al., 1998; Duquette et al., 1995; Enzmann, 1996) and enhance feelings of work engagement (especially feelings of vigour and dedication).

Police officers using avoidance coping strategies showed an increase in all three dimensions of burnout. However, the results of the canonical correlation showed that the use of avoidance coping strategies resulted in higher work engagement (especially absorption). This

finding could reflect a conscious attempt at turning away from the stressful source. Furthermore, the objective of using avoidance coping could be to distract the officer from the stress source, to replace unpleasant, nonconstructive thoughts with more positive self-talk, or to take the necessary time to enhance one's resources and to think through a rational, logical, and effective reaction to the stressful situation (Anshel, 2000).

The findings of the SEM provided empirical support for the valuable effect of seeking emotional social support as an aid against exhaustion. This supports the findings of Zellars and Perrewé (2001). Furthermore, it seems as if emotional social support functioned as both a problem-focused and emotional-focused coping strategy, given the covariance with active coping as well as with avoidance. Therefore, a police officer in the process of seeking social support from a co-worker can either solicit tangible information or emotional support (Patterson, 2000).

Turning to religion emerged very clearly in the factor analyses of coping activities. Therefore, while turning to religion was clearly a coping technique reported by some officers, it appears unlikely to be either particularly helpful or harmful in coping with police stress. However, police officers' use of religion appeared to do them no good at all in reducing burnout. However, religion seems to be associated with higher levels of work engagement.

The present study also has some limitations that should be considered. The research design is cross-sectional. As a result, no causal inferences could be drawn, despite the use of advanced structural equation modelling techniques. Therefore, the causal relationships between variables were interpreted rather than established. Self-reporting measures were exclusively relied upon. This may lead to a problem commonly referred to as "method-variance" or "nuisance". Furthermore, a non-probability sample has been used, which implies that the findings cannot be generalised to other settings.

RECOMMENDATIONS

Given the pervasive nature of burnout, the police organisation should design and implement planned interventions. Although it is important to assist individual police officers whose psychological well-being is affected by their work, an organisational rather than an individual approach is more likely to be effective, as most stressors were found to be at an

organisational level. Furthermore, it is important to focus on police officers' coping strategies. The assessments of coping strategies might be efficaciously incorporated into personnel selection procedures and individual stress coping training might be beneficial. However, a more desirable strategy is to make the organisation inherently less stressful. Since job demands play a central role in burnout and work engagement, it is necessary to implement preventive organisationally based strategies to tackle high job demands.

Several suggestions for future research are derived from the present findings. In conjunction with studying the obvious factors that are believed to be related to burnout in police officers, it is also necessary to include personality variables in future research. Future research needs to explore the underlying mechanisms of personality that produce different coping patterns and preferences. In studying work engagement, researchers should consider using positively phrased rather than negatively phrased items to measure job resources. Future studies should use large samples and adequate statistical techniques (e.g. structural equation modelling). Large sample sizes might provide increased confidence that study findings would be consistent across other similar groups.

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CHAPTER 6

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

In this chapter, conclusions are drawn regarding the specific objectives of this study. The limitations of the research are discussed, followed by recommendations for the organisation and future research.

6.1 CONCLUSIONS

The first objective of this study was to determine the construct validity and internal consistency of the MBI-GS for SAPS members. The results obtained using the structural equation modelling approach supported a three-dimensional factor structure. However, based on both conceptual and empirical grounds, item 13 was eliminated from the original MBI-GS, resulting in a 15-item scale. It seems as if problems might be caused by the ambivalent nature of this item. On the one hand, a high score may indicate disengagement and social isolation by closing oneself off from contacts with others at work. On the other hand, a higher score may indicate strong motivation and engagement: one concentrates on the task and does not want to be interrupted. Reliability analyses revealed that all three subscales were sufficiently internally consistent.

The second objective was to determine if the scales of the MBI-GS shows construct equivalence for different race groups in the SAPS and if the items of the inventory are unbiased. The results of this study confirm the construct (structural) equivalence of the MBI-GS for White, Black, Coloured and Indian members of the SAPS. Therefore, it can be deduced that the same constructs of burnout were measured in the four groups. The MBI-GS items did not show uniform or non-uniform bias. Therefore, it seems acceptable to use the MBI-GS to compare burnout levels for different race groups.

The third objective was to determine the construct validity and internal consistency of the UWES for SAPS members. It was decided to test a three-factor and a one-factor model, using structural equation modelling. Although Schaufeli et al. (2002, in press) confirmed a three-dimensional construct in previous studies, the three-factor structure is by no means to be

considered self-evident in this study. The three-factor model represented the data quite well, albeit after removing two unsound items (item 4 and item 14). However, the one-factor model (after deleting items 3, 11, 15 and 16 and allowing some error terms to correlate) fitted the data better. But there is, as yet, insufficient evidence to suggest that a one-factor model is superior to a three-factor model. Based on these results, it seems as if the UWES must undergo intensive psychometric evaluation before it could be used as a suitable instrument for measuring work engagement of police members in the SAPS.

It is believed that this confusing state of affairs does not reflect weaknesses inherent in the UWES, but is rather due to more general factors. First, the UWES is a recently constructed measuring instrument. Therefore, relatively few studies have critically reviewed its psychometric properties. Secondly, the UWES is an instrument that was originally constructed from data based on samples of individuals in the Netherlands (Schaufeli & Bakker, 2001). Therefore, valid research that compares levels of work engagement in South Africa is lacking and a thorough psychometric evaluation of this instrument in our specific national context will be influenced by the specific culture of the country (or more specifically, the culture of the police organisation). Schaufeli et al. (in press) also found that the hypothesised three-factor model of work engagement was invariant across Spanish, Dutch and Portuguese samples. Also, the dimensionality of the UWES could be influenced because of the high reported correlations between the three dimensions. Explicit theory indicating exactly how the three sub-scales relate to one another and to other variables must be developed before one can evaluate thoroughly the theoretical validity of a three-component conceptualisation.

Internal consistencies were computed for the three work engagement scales, which revealed that all three subscales are sufficiently internally consistent according to the guideline of Nunnally and Bernstein (1994). An alpha coefficient of 0,92 was found for the one-factor model.

The fourth objective was to determine if the scales of the UWES show construct equivalence for different race groups in the SAPS and if the items of the inventory are unbiased. The results showed that equivalence was acceptable for White, Black, Coloured and Indian police members. Bias was examined for each item separately. The UWES items did not show

uniform or non-uniform bias. Therefore, it seems acceptable to use the UWES to compare work engagement of different race groups.

The fifth objective of this study was to set norms to classify SAPS members according to their levels of burnout and work engagement. No norm groups were available to compare the levels of burnout and work engagement of the police officers in this study. Therefore, this sample of police officers in the SAPS served as the normative sample and could serve as reference for relative burnout and work engagement of other police members in the SAPS.

Following the test authors of the MBI, the sample was arbitrarily divided into three equally sized groups, assuming that the top, intermediate and bottom thirds of the sample would experience "high", "average" and "low" levels of burnout and work engagement respectively. Scores for this sample of police officers in the SAPS were considered high if they were in the upper third of the normal distribution, average if they were in the middle third, and low if they were in the lower third.

The next objective was to determine if demographic groups in the SAPS differ regarding their levels of burnout and work engagement. Regarding burnout, no practically significant differences were found between age, gender, rank and size of station. Differences (of medium practical significance) were found between the burnout scores of educational groups, race groups and provinces.

- Regarding education, practically significant differences were found between police members with higher levels of education (technikon diploma, university degree and postgraduate degree) compared to lower-educated members (Grade 10 and 11). Officers with a higher level of education experienced higher levels of professional efficacy than lower-educated members.
- Differences between race groups showed that Indian police officers experienced the highest levels of exhaustion and cynicism, followed by White and Black officers. Coloured officers experienced the lowest levels of exhaustion and cynicism. Indian officers experienced the highest levels of professional efficacy, followed by White and Coloured officers. Black officers experienced the lowest levels of professional efficacy.

However, practically significant differences were found only between Indian and Coloured officers on exhaustion and between Indian officers and Coloured and Black officers on professional efficacy.

- No significant differences were found between police members in different provinces on the exhaustion and cynicism dimensions. However, members in KwaZulu-Natal, Western Cape, Limpopo Province and Mpumalanga experienced practically significantly higher levels of professional efficacy than officers situated in the Free State.

No practically significant differences were found between the work engagement of various demographic groups. Statistically significant differences were found between age groups on all three dimensions of work engagement. Statistically significant differences were also found between the work engagement of males and females, with males experiencing higher levels of vigour and dedication. However, none of these differences were practically significant.

The next objective was to determine if job stress and coping strategies could predict the burnout and work engagement of SAPS members. The results of the canonical correlations showed that high job demands, lack of resources and avoidance coping and low active coping are associated with higher exhaustion and cynicism and lower professional efficacy. Furthermore, high job demands, lack of resources, police stressors and active coping are associated with higher exhaustion, but primarily with higher professional efficacy. Also, low demands and high active coping, avoidance and emotional support are associated with higher cynicism.

The structural equation analysis showed that police officers who experience high job demands and a lack of resources experienced higher exhaustion. Furthermore, when police officers used avoidance coping strategies, they showed an increase in exhaustion. However, when they used active coping strategies and utilised their emotional support from friends or relatives, their level of exhaustion decreased.

Regarding cynicism, the use of active coping strategies decreased feelings of cynicism, while the use of avoidance increased those feelings. Interestingly, not job demands or lack of resources was related to cynicism. This is in contrast to many other research findings (e.g. Leiter, 1991, 1993; Lee & Ashfort, 1996; Taris et al., 1999). A possible explanation could be

that job demands and lack of resources influenced cynicism through exhaustion. In the SEM model, it is clear that feelings of exhaustion lead to cynicism. This is also consistent with the model of developmental sequence of the three dimensions as has been proposed by Leiter and Maslach (1988). They suggest that exhaustion should appear first as chronic excessive work demands drain individuals' emotional resources. As a coping strategy, cynicism develops because individuals limit their involvement with others and their work. Also, in the SEM, no path was allowed between cynicism and professional efficacy. This is also consistent with Leiter (1993), who belief that professional efficacy develops largely independently of exhaustion and cynicism. Therefore, it could be argued that high job demands and resources lead to higher feelings of exhaustion, which, in turn, leads to higher levels of cynicism.

A lack of resources leads to lower levels of professional efficacy. This supports the findings of Leiter (1991, 1993), Taris et al., (1999) and Schaufeli and Enzmann (1998). Also, the use of active coping strategies lead to higher feelings of professional efficacy, where the use of avoidance as a coping strategy lead to lower feelings of accomplishment in the officers' work.

Stepwise multiple regression analysis was conducted to determine the proportion of variance in work engagement that is predicted by job stress and coping. It seems as if work engagement is predicted by active coping strategies (12,35%), low job demands (2,68%), lesser use of avoidance coping strategies (1,04%), emotional support (0,85%), turning to religion (0,56%) and lower lack of resources (0,35%). It seems as if active coping and job demands are the major predictors of work engagement.

6.2 LIMITATIONS OF THIS RESEARCH

The first limitation of this study is that the design is cross-sectional. As a result, no causal inferences could be drawn, despite the use of advanced structural equation modelling techniques. Therefore, the causal relationships between variables were interpreted rather than established, and more complex forms of non-recursive linkages could not be examined. Strictly speaking, it is inappropriate to speak of job stressors and coping "affecting" burnout and work engagement. All that has been established is that the pattern of effects is consistent with previous theoretical findings regarding the temporal order of the various variables. It can

also not be ruled out that the independent variables accompany symptoms of burnout instead of being their antecedent. However, several longitudinal studies have shown that job characteristics such as job demands had mainly causal relationships with health outcomes, in such a way that the outcomes tended to occur *after* job perceptions, rather than vice versa (see Buunk, de Jonge, Ybema & de Wolff, 1998).

To deal with the limitation of the use of a cross-sectional design, prospective longitudinal studies and quasi-experimental research designs are needed to further validate the hypothesised causal relationships between antecedents and possible consequences like burnout and work engagement.

Secondly, the results were obtained solely by self-report questionnaires. This may lead to a problem commonly referred to as "method-variance" or "nuisance". However, a review by Spector (1987) found little evidence of common method variance among self-report measures of the kinds of constructs studied here. Furthermore, several authors have argued that this phenomenon is not a major threat if interactions are found (Dollard & Winefield, 1998; Wall, Jackson, Mullarkey & Parker, 1996). Another aspect to consider is that few alternative methodologies are suggested to deal with the use of self-report measures. Nonetheless, research, including more objective measures of job characteristics and/or outcomes, is still needed. Dolan (1995) suggested that a logical way to capture the complex interactions between the numerous variables associated with burnout (and work engagement) is through a conceptually multivariate approach, represented by a mosaic of individual traits and job/environment factors.

Third, this research was conducted in a homogenous sample consisting of individuals of a specific profession, namely police officers in the SAPS. This police organisation probably has some unique characteristics, such as the specific organisational culture, that could have influenced the participants' responses. The implication is that the results could not be generalised to other contexts or professions. Therefore, there is still the need for replication in other occupational groups as well as heterogeneous samples.

Another limitation of this study was that there is a possibility that some officers who participated in this research did not totally trust the confidentiality statement set out in the

covering letter accompanying the questionnaires. This could have influenced some of the results.

6.3 RECOMMENDATIONS

Next, recommendations for the organisation as well as for future research are made.

6.3.1 Recommendations for the organisation

The effective implementation of individual, managerial and organisational practices to deal with burnout depends on managers' and employees' clear and accurate understanding of the burnout phenomenon. Managers and employees should become aware of the causes and symptoms of burnout. This could help them become aware of their own and others' exhaustion, cynicism, and low professional efficacy, and intervene before the effects of burnout are too serious. It is also important for managers, should it be the case, to become aware of the fact that they are suffering from burnout because they may spread it to their subordinates.

Given the pervasive nature of burnout, the police organisation should design and implement planned interventions. These interventions should be designed for the long term and deal with the root cause rather than just the symptoms (Lee & Ashforth, 1993). Individual-based interventions to reduce burnout symptoms might be an avenue to pursue. These interventions include techniques such as self-monitoring, self-assessment, didactic stress management, promoting a healthy lifestyle and relaxation (see Schaufeli & Enzmann, 1998, pp. 146-168). Stress-management programmes that use a cognitive-behavioural approach are also effective in reducing stress reactions, including burnout. However, according to Schaufeli and Bakker (2002), organisation-based programmes should supplement such individual-based programmes in order to be effective in the long run. Organisational development interventions in general, as well as interventions to influence culture and values, should be implemented to contribute to healthier workplaces. Furthermore, psycho-educational programmes should be developed and presented to combat burnout and to promote work engagement.

Since job demands play a central role in the process that might lead to burnout and health problems, reducing those demands seems to be warranted. Many preventive organisational-based strategies exist to tackle high job demands, such as job redesign, flexible work schedules and goal setting. Increasing job resources (e.g. through participative management, increasing social support and team building) on the other hand, would eventually lead to more engagement at the job, but its direct effect on burnout is small. Hence, from a preventive point of view, decreasing job demands is to be preferred above increasing job resources.

It is important to focus on police officers coping strategies. The assessments of coping strategies might be efficaciously incorporated into personnel selection procedures and individual stress coping training might be beneficial. However, a more desirable strategy is to make to organisation inherently less stressful. Since job demands play a central role in burnout and work engagement, it is necessary to implement preventive organisational based strategies to tackle high job demands.

Police management could also benefit by considering the following antidotes for burnout as identified by Cherniss (1995):

- Finding meaningful work. A meaningful job helps police members remain dedicated. Such a job has several characteristics. Firstly, it must make a significant impact, for example on other people's lives. However, the individual must be able to see the significant impact of the job. Secondly, the job should provide an intellectual challenge. Thirdly, the job must provide scope for experiencing change to prevent boredom. Fourthly, the individual should be able to cultivate his or her special interests in the job.
- Finding greater professional autonomy and support. Individuals who recovered from burnout managed to avoid demoralising bureaucratic obstacles and organisational politics. In most cases they had to change jobs, but eventually they found work settings in which they had a high degree of autonomy. However, a supportive work setting is also necessary to recover from burnout. Police members need both tangible and emotional support, including trust and confidence, recognition and feedback and active interest of the immediate manager. Furthermore, support for continued learning and stimulating colleagues are also valuable.

- Individual factors contributing to resilience. Developing career insight early in the career, developing of organisational negotiation skills, realistic goals and expectations, actively pursuing personal development and striking a balance between work, family and leisure contribute to recovery from burnout.

6.3.2 Recommendations for future research

Despite the limitations of this study, the present findings may have important implications for future research and practice. First, the fact that burnout can be found within as well as outside human-service professions may stimulate future burnout research in a wide range of occupations (Schutte et al., 2000). Future research in South Africa needs to focus on the relative prevalence of burnout in various occupations. Differences between occupational groups regarding absolute burnout scores may help identify occupations that are most at risk of burnout. Furthermore, by conducting burnout and work engagement research in various other occupational groups, norms for professions, occupational groups and organisations could be developed and comparisons of these groups could be made. It is also necessary to identify target groups for intervention research from these studies.

One of the problems in assessing the burnout and work engagement levels of employees is the lack of validated cut-off points. Because of a lack of South African norms for the MBI and UWES, it is difficult to identify burnout and work engagement at an early stage. Therefore, research needs to be conducted in other occupational groups that can serve as normative samples and as reference for relative burnout and work engagement levels of individuals in other occupations.

A major problem with the MBI is the lack of clinically validated cut-off points. Researchers need to administer the MBI on individuals who show the clinical profile of burnout to validate the inventory. Because burnout is not included in the DSM IV classification, individuals who suffer from neurasthenia could be used to determine the cut-off points (Rothmann, 2002). Neurasthenia is a neurosis characterised by chronic exhaustion, physical complaints and a lack of concentration.

Research is needed to standardise measuring instruments which could be used for measuring burnout (including all the versions of the MBI) as well as work engagement (including the UWES). Studies are also necessary to determine the psychometric properties of the above-mentioned measuring instruments. Because of the inherent problems associated with measurement in multicultural contexts, analyses should not only focus on internal consistency, test-retest reliability and construct validity, but also on equivalence and bias. Large samples which are taken randomly from the relevant strata should be used to enable researchers to use advance statistics such as exploratory factor analyses with target rotations, analysis of variance to detect item bias, confirmatory factor analyses and structural equation modelling. More research is needed regarding the conceptualisation and measurement of work engagement. Various problems are experienced with the current items of the UWES, such as difficult item wording and positive response sets.

The dynamics underlying psychological strengths which could create tendencies contrary to those that produce burnout or favourable to work engagement should be investigated. Causal models utilising longitudinal research designs should be used for this purpose. Research is also needed regarding the causes, effects and underlying processes of burnout and work engagement. For example, the Job Demand – Control Model (Karasek & Theorell, 1990) could be used to predict that burnout is related to the strain axis and work engagement to the active learning axis (Demerouti, Bakker, Janssen & Schaufeli, in press). Also, the Job Demand – Resources Model could be used to test the extent to which job demands are related to the affective dimension of well-being (burnout) and job resources to the cognitive dimension (Demerouti et al., 2001). This could then indicate two types of processes:

- High job demands lead to a negative evaluation of work, which results in health complaints because the employee is exhausted.
- The presence of material and immaterial resources lead to stronger identification with work, and better performance because the employee is motivated.

In studying work engagement, researchers should consider using positively phrased rather than negatively phrased items to measure job resources. Furthermore, research is needed to determine whether work engagement contributes to reduced taking of sick leave, productivity, job satisfaction and quality of goods and services.

In conjunction with studying the obvious factors that are believed to be related to burnout in police officers, it is also necessary to include personality variables in future research. Future research needs to explore the underlying mechanisms of personality that produce different coping patterns and preferences. For example, different personality types may cope differently in similar situations because personality influences the kind of psychological demands that people face in particular situations (Shoda, Mischel & Wright, 1993). Personality may also predict coping because it systematically influences appraisals, goals, expectancies and social cognitive processes in stressful situations (Mischel & Shoda, 1994). Research regarding the relationship of personality traits and burnout, should be done using dispositional traits, such as the big five personality dimensions, hardiness, locus of control, self-esteem, type A behaviour and sense of coherence.

With regard to intervention research in South Africa, the following aspects need to be considered in future research:

- The effects of individual and organisational interventions should be investigated.
- Appropriate designs and acceptable sample sizes should be used when conducting research.
- Practical significance of findings should be computed in addition to statistical significance.
- Methods for defining and determining the clinical significance of treatment effects should be employed (Jacobson, Roberts, Berns & McGlinchey, 1999).
- Intervention mapping (Bartholomew, Parcel & Kok, 1998) should be used in planning, implementing and researching the effects of interventions.
- Different types of change (alpha, beta and gamma) should be considered when researching the effect of interventions (Vandenberg & Self, 1993).
- Both etiological and prevention effectiveness studies should be conducted (Skov & Kristensen, 1996).

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