

**SENSE OF COHERENCE, WORK LOCUS OF CONTROL AND  
BURNOUT AMONGST MID-LEVEL MANAGERS IN  
UNDERGROUND COAL MINING OPERATIONS IN  
MPUMALANGA**

**by**

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## **FOR THE ATTENTION OF THE READER**

### **SCOPE OF THE DISSERTATION**

For this Masters' dissertation of limited scope (50% of the total Masters' degree) the Department of Industrial and Organisational Psychology prescribes an article format. This format involves four chapters – an introductory and literature chapter, followed by a research article (presented as Chapter 3) and ending with a conclusion/limitations/recommendations chapter. For this dissertation, the Department recommends a limit of approximately 60 to 80 pages, excluding references.

### **TECHNICAL AND REFERECE STYLE**

In this dissertation I have chosen the publication guidelines of the South African Journal of Industrial Psychology to structure my dissertation and article. Therefore, the APA referencing style was followed in terms of the technical editing and referencing.

### **DECLARATION**

I, Charmaine Horn, student number 45742979, declare that 'Sense of coherence, work locus of control and burnout amongst mid-level managers in underground coal mining operations in Mpumalanga' is my own work, and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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SIGNATURE

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DATE

## ACKNOWLEDGEMENTS

*This dissertation is dedicated to my little boy Dehan. You are my greatest achievement.*

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## **SUMMARY**

The objective of the study was to investigate the relationship between sense of coherence, work locus of control and burnout amongst mid-level managers in underground coal mining, and to determine whether sense of coherence and work locus of control can predict the level of burnout in the sample. A cross-sectional survey design was used and three questionnaires were administered, namely the Orientation to Life questionnaire, The Maslach Burnout Inventory – General Survey and the Work Locus of Control Scale. The sample consisted of 131 mid-level managers from a leading coal mining organisation in Mpumalanga, South Africa. The results indicated low to moderate levels of exhaustion, cynicism and reduced professional efficacy, as subdimensions of burnout, in the sample group. Sense of coherence and internal work locus of control showed statistically significant negative correlations with burnout. The two salutogenic constructs predicted a significant portion of the variance in burnout in the sample group.

## **KEY TERMS**

Occupational Stress; Burnout; Salutogenesis; Sense of coherence; Work locus of control; Mid-level managers; Underground Coal Mining

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## **CHAPTER 1**

### **SCIENTIFIC ORIENTATION TO THE RESEARCH**

This research investigates the relationship between sense of coherence, work locus of control and burnout amongst mid-level managers in underground coal mining operations in Mpumalanga. In Chapter 1 the background and problem statement elaborates on the socio-economic, environmental, organisational and job-related stressors that make mid-level managers in underground coal mining a particularly vulnerable group with regards to occupational stress and possible subsequent burnout. The potential mitigating impact of the two salutogenic constructs, sense of coherence and locus of control, on the burnout phenomenon is explored in the problem statement. From this, the research questions and aims of the research are formulated. The paradigmatic perspective of the research is discussed briefly, followed by a discussion of the research strategy and research methodology. Chapter 1 concludes with a brief overview of the sequence of chapters in the dissertation.

#### **1.1. BACKGROUND**

Mid-level managers in the underground coal mining industry may be particularly vulnerable to experience occupational stress and possible subsequent burnout, due to the magnitude of socio-economic, environmental, organisational and job-related stressors they are exposed to on a daily basis.

South Africa has vast mineral wealth with more than 52 commodities under its surface. The mining industry has played a significant role in supporting the country's GDP, infrastructure development and job creation. However, in recent years, mining companies have experienced a severe decline in profit margins. This is due to stagnant or falling commodity prices; higher input cost due to labour and energy cost increasing above inflation; ever-increasing demands by unions and mine workers, as well as increased expectations from government and society for mining companies to fulfil social needs (Campbell, 2002; Deloitte, 2013). Mining companies are thus under significant

pressure to optimise their organisations, by increasing production numbers and efficiency, whilst cutting cost.

In the coal mining industry a growth in consumer demand in the coal-to-liquid and energy generation industries have added significantly to the production pressure (D'Oliviera, 2013). Rothmann, Steyn and Mostert (2005) highlighted the extreme competitive, expensive and demanding nature of modern business, which add to the constant pressure on management and employees to reach higher targets. However, as with most industries in the South African socio-economic arena, the coal mining industry's production capability is fraught by challenges such as skills shortages, HIV/Aids and other ill-health related absenteeism, labour unrest and strikes (Campbell, 2002; Donoghue, 2004).

Employees in the coal mining industry are exposed to precarious working conditions, which are characteristic of underground coal mining (Oldfield & Mostert, 2007). Environmental stressors in coal mining include poor illumination, wet and cold conditions, exposure to noise levels above 85dB, long-term exposure to dust, physical strain and limited exposure to daylight (Donoghue, 2004; Luthans, 2008; Oldfield & Mostert, 2007). Unsafe working conditions include potential rock falls, hazardous and fiery gasses, mobile equipment, risks of explosions, fire and entrapment, and are a constant threat in the mining industry (Amponsah-Tawiah, Jain, Leka, Hollis, & Cox, 2013; Donoghue, 2004; Masia & Pienaar, 2011; Oldfield & Mostert, 2007; Pule, 2011).

At an organizational level, shift work, long working hours, unionization, production pressure, bureaucratic rules and "red-tape" contribute to the stress levels of coal mining employees (Masia & Pienaar, 2011; Oldfield & Mostert, 2007; Strydom & Meyer, 2002).

Apart from the socio-economic, environmental and organisational sources of stress, mid-level managers may experience a variety of job-related stressors. Mid-level management is responsible for the implementation of plans and programmes. They simultaneously serve as manager and supervisor, and can be seen as the bridge between the policymakers and the staff who implement the policies (Strydom & Meyer, 2002). Supervisors in the

Northern Cape mining industry reported having to balance high workloads and high expectations from their seniors with the added burden of constantly dealing with problematic subordinates and their needs (Jacobs, Mostert, & Pienaar, 2008).

According to the HR General Manger of the target organisation, the role of the mid-level manager in the research organisation has changed dramatically over the last couple of years due to business optimisation (JA Botha, personal communication, 20 May 2014). Support functions such as Finance, Procurement, HR, Training and Safety, Health and Environment have been centralized to facilitate cost reduction. The mid-level manager no longer has the luxury of support personnel “just down the corridor”, and additional planning and coordination of the support tasks became part of the mid-level manager’s responsibility. Thus, apart from being responsible for the production of coal and the supervision of his/her team, the mid-level manager is also tasked with the coordination of functions such as procurement of tools, equipment and protective clothing; HR processes such as approval of leave and work hours; service provider management; safety observations and inspections; communication; attending several meetings; training and coaching of employees on new procedures, and more (JA Botha, personal communication, 20 May 2014).

Taking the above into account, it is plausible for mid-level managers to feel overwhelmed by the job demands and other stressors. In a study done by Strydom and Meyer (2002), mid-level managers in the Western Cape reported despondency and feelings of “not coping” with workplace demands. Rothmann (2008) found that role-overload and increased job demands significantly increased the level of occupational stress in the South African police force. Occupational stress was defined by Cooper (2000) as the interaction between the individual and the environment, where the individual did not feel he/she had the (personal or physical) resources to address the perceived threats. Amponsah-Tawiah et al. (2013) referred to job-related stressors (such as work overload, lack of control, role ambiguity, poor organisational culture, lack of support, poor interpersonal relationships, etc.) as psychosocial hazards. Psychosocial hazards are defined as facets of the design and management of work, and its social and organisational context that have the potential to cause psychological harm (ILO, 2010).

Long-term exposure to the above-mentioned stressors could have serious implications for both the organisation and the wellbeing of employees. Masia and Pienaar (2011) found that job-related stressors in the mining industry had an adverse effect on organisational commitment, job satisfaction and safety performance. Donoghue (2004) claimed that occupational stress, if unmanaged, was one of the most important predictors of adverse health outcomes such as burnout and psychosomatic health complaints.

For the purposes of this study, occupational stress is considered to be omnipresent in the coal mining industry, and specifically in mid-level management positions. This research aims to investigate the incidence of burnout, as an adverse reaction to above mentioned stressors, in mid-level managers. However, despite the presence of numerous inherent and job-related stressors in the sample group, not all mid-level managers in the mining industry will become burned out. The researcher, therefore, also explores why some individuals are able to cope successfully with the stressors, without becoming burned out.

## **1.2. PROBLEM STATEMENT**

As outlined in the above background to the study, mid-level management in an underground coal mining operation appears to be a difficult and challenging task. Mid-level managers are exposed to an array of stressors on a daily basis, which may make them particularly vulnerable to becoming burned out. Burnout is defined as a continual negative state of mind with regards to work, which entails exhaustion, cynicism and reduced professional efficacy (Maslach & Leiter, 1997). Storm and Rothmann (2003) explained that a person's tolerance to stress gradually erodes as job demands and the onslaught of stressors surpass the individual's ability to respond or adapt to them. Research confirmed a strong correlation between occupational stress and burnout (Rothmann, 2008).

Antonovsky (1987) claimed that stressors are an integral part of human existence. He observed that some individuals seemed to cope successfully in spite of the ubiquitous stressors, and even seemed to thrive on adversity. This led to his now famous question: "Whence the strength?", which inspired a wealth of salutogenic (health and wellness related) research (Antonovsky, 1987, p.7). Salutogenic functioning is praised for

improving man's ability to cope successfully with stressors and adversity (Antonovsky, 1987). This is discussed in more detail in the paradigm perspective of the research, as well as in the literature review.

Salutogenic constructs include behavioural constructs such as self-actualisation, sense of coherence, hardiness, potency, self-efficacy, learnt resourcefulness and internal locus of control (Strümpfer, 1990). In this study, two salutogenic constructs, namely sense of coherence and work locus of control, are investigated, as well as their impact on burnout.

Sense of coherence is defined as the extent to which an individual believes that demands are predictable, structured and explicable (comprehensible); that he/she has the resources and ability to meet the demands (manageable), and that the demands are worthy of emotional investment (meaningful) (Antonovsky, 1987). Locus of control is described as the individual's belief that rewards and outcomes are the consequence of either his/her own behaviour and choices (internal locus of control), or of external forces (external locus of control) (Spector, 1988).

A wealth of research confirms the mitigating impact of sense of coherence on burnout (Harry & Coetzee, 2011; Gilbar, 1998; Levert, Lucas, & Ortlepp, 2000; Rothmann, Jackson, & Kruger, 2003; Rothmann, 2004; Rothmann, Malan, & Rothmann, 2001; Van der Colff & Rothmann, 2009; Van Jaarsveld, 2004; Viljoen, 2013). The inverse relationship between internal locus of control and burnout is also well established in literature (Akça & Yaman, 2010; Glass & McKnight, 1996; Rothmann, 2004; Rothmann & Malan, 2003; Schepers, Gropp, & Geldenhuys, 2006).

There are, however limited research on the impact of sense of coherence and work locus of control on burnout within the coal mining industry and, especially, none on mid-level managers in the coal mining industry. Considering the importance of the role of the mid-level manager in the functioning of coal mining organisations, as well as the series of stressors they are exposed to, research on the wellness of this specific target group is paramount for the successful subsistence of the coal mining industry. By understanding the incidence of burnout and the characteristics that may mitigate its occurrence, one can attempt to provide mid-level managers with the necessary skills and support to improve

their general wellbeing.

Based on this, the following research questions can be formulated:

- a) What is the current level of salutogenic functioning in terms of sense of coherence in mid-level managers?
- b) What is the current level of salutogenic functioning in terms of work locus of control in mid-level managers?
- c) What is the level of burnout in mid-level managers?
- d) Is there a statistically significant correlation between the salutogenic constructs, sense of coherence and work locus of control, and burnout?
- e) Can burnout be predicted based on mid-level managers' sense of coherence and work locus of control?

### **1.3. AIMS OF THE STUDY**

#### **1.3.1 GENERAL AIM**

The general aim of this study is to investigate the relationship between sense of coherence, work locus of control and burnout amongst mid-level managers in underground coal mining operations in Mpumalanga, and to determine if sense of coherence and work locus of control can be used to predict the level of burnout in these managers.

#### **1.3.2 SPECIFIC AIMS**

##### **1.3.2.1 The specific literature aims of this research are as follows:**

- a) To conceptualise sense of coherence from existing literature;
- b) To conceptualise locus of control and work locus of control from existing literature;
- c) To conceptualise burnout from existing literature; and

- d) To conceptualise the theoretical relationship between sense of coherence, work locus of control and burnout from existing literature.

**1.3.2.2 The specific empirical objectives of this research entail the following:**

- a) To determine the level of sense of coherence amongst mid-level managers in underground coal mining operations in Mpumalanga;
- b) To determine the level of work locus of control amongst mid-level managers in underground coal mining operations in Mpumalanga;
- c) To determine the level of burnout amongst mid-level managers in underground coal mining operations in Mpumalanga;
- d) To determine the relationship between sense of coherence, work locus of control and burnout amongst mid-level managers in underground coal mining operations in Mpumalanga;
- e) To determine if sense of coherence and work locus of control can be used as predictors of burnout of mid-level managers in underground coal mining operations in Mpumalanga; and
- f) To formulate recommendations based on the literature and empirical findings of this research with regard to future research, and training and development of mid-level managers in underground coal mining operations in Mpumalanga.

The research hypotheses are formulated as follows:

- Hypothesis 1: There is a statistically significant negative relationship between sense of coherence and burnout in the sample group of mid-level managers in underground coal mining operations in Mpumalanga.
- Hypothesis 2: There is a statistically significant negative relationship between internal work locus of control and burnout in the sample group of mid-level managers in underground coal mining operations in Mpumalanga.
- Hypothesis 3: Sense of coherence and work locus of control can statistically significantly predict the level of burnout in mid-level managers in underground coal mining operations in Mpumalanga.

#### **1.4. THE PARADIGM PERSPECTIVE**

This research focuses primarily on industrial/organisational psychology, specifically on the sub-discipline occupational wellness. Industrial/organisational psychology is defined as a specialized field within the bigger arena of psychology that focuses specifically on the development and application of psychological research and principles to the work situation (Louw & Edwards, 1998; Spector, 2003). Wissing and Van Eeden (2002) defined occupational wellness as an individual's self-regard and mastery as well as his/her ability to lead a life of purpose and have meaningful connections with others in the work context.

The study of burnout forms part of the pathogenic paradigm. The pathogenic paradigm is concerned with the origins of disease, i.e. why people fall ill and develop specific diseases (Antonovsky, 1987). In the pathogenic orientation, an individual is either, sick or well, or diseased or non-diseased. Antonovsky (1987) criticised the pathogenic paradigm for not acknowledging the healthy status of individuals who manage to stay well despite ubiquitous stressors/ risk factors that predict poor health. From this the salutogenic paradigm developed.

Salutogenesis (from Latin: *salus* = health; from Greek: *genesis* = origins) is based on the study of health and wellness in individuals that enables them to cope with unavoidable stressors and even thrive on it (Antonovsky, 1979, 1987; Strümpfer, 1990). Strümpfer (1995) confirmed that salutogenesis focuses on the unravelling of the mystery of health and is an attempt to address how people manage stress and stay well. In salutogenesis, the individual is not categorised as being either diseased or non-diseased. Rather, individual functioning may be plotted anywhere along the line from one pole of ease to the other pole of disease (Antonovsky, 1983). Kraft, Mussman, Rimann, Udris, and Muheim (1993) suggested that those individuals who have good salutogenic functioning move closer to the health side of the ease/disease continuum. Sense of coherence and locus of control are both constructs of the salutogenic paradigm (Strümpfer, 1990).

Since the research is quantitative in nature, a positivist empirical paradigm is followed.

Positivism is defined by Terre Blanche, Durrheim, and Painter (2006) as a quantitative research paradigm concerned with the gathering of information in an objective and detached manner.

## **1.5. RESEARCH DESIGN**

The research is quantitative and descriptive in nature. Descriptive studies allow for the measurement of frequency in which a specific characteristic or variable occurs in a sample (Mouton & Marais, 1993). The research furthers attempts to predict the degree to which the independent variables or antecedents (sense of coherence and work locus of control) predict the incidence of the dependent variable or consequent phenomenon (burnout). A cross-sectional survey design is used to achieve the objectives of this study. In a cross-sectional design all the data are collected at a single point in time (Spector, 2003).

## **1.6. RESEARCH METHOD**

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

### **1.6.1 PHASE 1: LITERATURE REVIEW**

- Step 1: Literature review (analysis and integration) of sense of coherence;
- Step 2: Literature review (analysis and integration) of work locus of control;
- Step 3: Literature review (analysis and integration) of burnout; and
- Step 4: Integration of the above literature to ascertain the theoretical relationship between sense of coherence, work locus of control and burnout.

### **1.6.2 PHASE 2: EMPIRICAL STUDY**

#### **Step 1: Selecting the population and sample.**

The data were collected from mid-level managers in a leading coal mining organisation situated in Mpumalanga, South Africa. These mid-level managers are distributed over

five mining operations, consisting of fifty two underground production sections. The mining practices, reporting structures and rules and regulations are similar in all the production sections.

Mid-level managers, for the purposes of this study, included all employees with one or more persons reporting to them, and who are employed on job levels four to eight. Employees from the production, maintenance and selected services areas were targeted. The following job categories were targeted: Miners and Artisans (as first line supervisors), Shift Bosses, Foremen, Mine Overseers, Mine Captains, Chief Foremen and Shaft Managers. Only support functions with similar working conditions, such as shift work and regular underground visits, were included in the study and consisted of employees from the Safety, Health and Environment, Surveyance and Geology, and Planning and Optimising departments. Other transactional service departments such as Human Resources, Finance, Information Technology, Communication and other administrative services were excluded from the study. The entire population of 587 mid-level managers was targeted, which can be described as a convenience sampling strategy.

## **Step 2: Selection of Measuring instruments and motivation**

### *Sense of coherence*

The Orientation to Life Questionnaire (OLQ) was introduced by Antonovsky (1987) and measures sense of coherence as well as its three dimensions, namely comprehensibility, manageability and meaningfulness. The questionnaire consists of 29 questions, which should be answered on a seven-point Likert scale. Thirteen of the items (1, 4, 5, 6, 7, 11, 13, 14, 16, 20, 23, 25, and 27) are worded in the negative and have to be reverse scored. Strümpfer and Wissing (1998) reported Cronbach alphas ranging from 0.74 to 0.94 in a South African study and Cilliers and Kossuth (2004) established high test-retest reliability. Validity was established by Strümpfer and Wissing (1998). The Orientation to Life Questionnaire is an established instrument in the field of psychology and is considered a valid and reliable instrument for measuring sense of coherence (Antonovsky, 1993; Cilliers & Coetzee, 2003).

### *Work Locus of control*

The Work Locus of Control Questionnaire (WLCS) was introduced and validated by Spector (1988) and is a domain-specific instrument to assess locus of control in organisational settings. The questionnaire consists of 16 questions measured on a seven-point Likert scale. The scale ranges from one (1) indicating “disagree very much” to six (6) indicating “agree very much”. A high total score (maximum 96) indicates external locus of control, and a low total score (minimum 16) indicates internal locus of control. Eight questions (question 1, 2, 3, 4, 7, 11, 14 and 15) are reverse scored. A low average score indicates internal locus of control, whilst a high average score indicates an external locus of control. Cronbach alphas range between 0.75 and 0.85, indicating acceptable reliability (Spector, 1988). High reliability was confirmed by Rothmann and Van Rensburg (2001) and De Jager (2006) with alpha coefficients of 0.70 and 0.85 respectively. Spector (1988) and Maram and Miller (1998) confirmed construct validity of the instrument. Spector (1988) also found that the Work Locus of Control scale correlated strongly (0.75) with Rotter’s Locus of Control Scale. The Work Locus of Control questionnaire is the only existing scale for measuring locus of control in organisational settings and meeting the terms of the theoretical concept of domain-specific locus of control.

### *Burnout*

The Maslach Burnout Indicator – General Survey (MBI-GS) measures burnout and consists of three subscales, namely exhaustion, cynicism and lack of professional efficacy (Maslach, Jackson, & Leiter, 1996). The MBI-GS is a variation of the original burnout indicators (MBI-HSS and MBI-ES), which can be applied to target populations beyond human services occupations (Maslach et al., 1996; Maslach & Leiter, 1997). The MBI-GS is a self-administered questionnaire containing 16 statements regarding the respondents’ feelings about their jobs. Questions are answered on a scale of 0 to 6, with zero (0) denoting “never having this feeling” and six (6) denoting “having this feeling every day”. Cronbach alpha coefficients were found to range between 0.87 to 0.89 for Exhaustion; 0.73 to 0.74 for Cynicism, and 0.76 to 0.84 for Professional Efficacy (Maslach et al., 1996). Van Jaarsveld (2004) and Viljoen (2013) confirmed the high reliability in the three subscales with internal consistencies ranging between 0.85 and 0.91. Test-retest reliabilities were 0.65 for Exhaustion, 0.60 for Cynicism and 0.67 for

Professional Efficacy after one year. Evidence was found to support the construct validity of the MBI-GS (Maslach et al., 1996).

### **Step 3: Research Procedure**

The necessary permission was obtained from the target organisation's Psychologists' Forum, Human Resources as well as senior management at the various shafts to administer the instruments in the organization. A cover letter explaining the aim of the study as well as the permission document from Human Resources and management were distributed to the entire population group of approximately 580 mid-level managers. The instructions and ethical considerations were discussed in detail and each participant was required to sign an informed consent document prior to completing the questionnaires. Ethical considerations included written permission to conduct the study, informed consent, the right to anonymity and the right to not partake in the study and were applied and communicated at all times.

Since most mid-level managers in underground coal mining work underground, the researcher sent an electronic link to a web-based survey document so that the participants could complete it in their own time. Mid-level managers who did not have access to e-mail were asked to complete paper-based questionnaires after communication sessions or shaft meetings. All three instruments were self-completion questionnaires and no time limit was set for the completion of the questionnaires.

### **Step 4: Statistical processing**

The statistical processing of the data commenced with the use of descriptive statistics (means, standard deviations, frequencies and percentages) to determine the degree to which the variables existed in the sample. Cronbach alphas were used to determine the reliability of the measuring instruments, whilst Pearson correlations established interrelationships between the variables. Since the research consisted of two independent variables and one dependent variable, multiple regressions were used to study the separate and collective contributions of the independent variables to the variation of a

dependant variable (Terre Blanche et al., 2006). The analysis was conducted by a professional statistician, using the SPSS software package (SPSS Inc, 2011).

### **Step 5: Reporting of results**

The results of the empirical study are reported and discussed by means of tables and figures displaying the statistical results and are addressed in the research article in Chapter 3.

### **Step 6: Conclusions of the research**

The conclusions of the research are based on both the literature and empirical findings on the extent of the relationship between sense of coherence, work locus of control and burnout amongst mid-level managers in underground coal mining operations in Mpumalanga. The conclusions are reported in Chapters 3 and 4 of the dissertation.

### **Step 7: Limitations of the research**

The possible limitations of the study will be formulated and reported on in Chapter 4.

### **Step 8: Formulation of the recommendations**

Based on the conclusion and limitations of the research, recommendations will be formulated for the application of the information and future research needs. These recommendations will be included in Chapters 3 and 4 of the dissertation.

## **1.7. CHAPTER LAYOUT**

The chapters are presented in the following manner:

- Chapter 1      Scientific orientation to the research;
- Chapter 2      Literature review;
- Chapter 3      Research article; and
- Chapter 4      Conclusions, limitations and recommendations.

## **1.8. CHAPTER SUMMARY**

Chapter 1 provided the scientific overview of the research, which included the problem statement, aims, paradigm perspective, research design and methodology as well as the chapter division. Chapter 2 fulfills the literature objective of the research and includes a literature review of the constructs sense of coherence, work locus of control and burnout, as well as interrelations between the constructs.

## **CHAPTER 2**

### **2. LITERATURE REVIEW**

In this chapter the constructs sense of coherence, work locus of control and burnout are conceptualised by reviewing historic and current literature. The paradigmatic origin of each construct is investigated. This is followed by a brief discussion of the history, development, definitions and characteristics of each of the constructs. The literature review includes an investigation of sense of coherence, work locus of control and burnout in the organisation as well as in mid-level management. Interrelationships between the constructs, as found in previous research, concludes the chapter.

#### **2.1. SENSE OF COHERENCE**

The sense of coherence construct originated from and is centred in the salutogenic perspective. It is thus important to discuss the development of the salutogenic paradigm first as it sets the scene for the development and the definition of the sense of coherence construct.

##### **2.1.1. History and development of the salutogenic paradigm**

In 1970, Aaron Antonovsky noted that a large proportion of participants in an unrelated study were concentration camp survivors who displayed reasonably good overall emotional and physical health, despite their previous incarceration. This made him ask the questions why they were able to stay healthy, particularly emotionally healthy, despite enduring the emotional and physical horrors inflicted on them in the concentration camp (Antonovsky, 1979).

Up to that point, most of medical, sociology and psychological research focused on why people became ill, referred to as the pathogenic perspective (Strümpfer, 1990). Antonovsky (1979) considered the many instances where individuals managed to stay well regardless of stressors, adversity, war, concentration camps, illness and loss. Antonovsky (1987) noted that despite the omnipresence of stressors, some individuals

were able to cope effectively with and even thrive on the stressors. His research focused on understanding the question: “Whence the strength?” (Antonovsky, 1979, p. 7). Antonovsky’s question set off an entire new paradigm in health related studies, named salutogenesis. The name salutogenesis was derived from the Latin word “salus”, which means health and the Greek word “genesis”, which means origins.

Antonovsky (1987, p. 3) proposes that “we all are, so long as there is breath or life in us, in some measure healthy”. People are, therefore, not categorized as being either diseased or non-diseased, but rather plotted towards either side of a health-ease/disease continuum. Coetzee and Cilliers (2001) noted that well-being is not necessarily indicated by the absence of psychopathology or even by the presence of psychological strengths. Correspondingly, pathology is not indicated necessarily by low scores on psychological strengths and well-being (Coetzee & Cilliers, 2001). The health-ease/disease continuum forms the crux of the salutogenic paradigm.

Strümpfer (1995) advocated that the term “psychofortology” be used in the realm of psychology as an expansion of the salutogenic paradigm. The term fortigenesis, in the opinion of Strümpfer (1995), is more appropriate as it focuses on holistic individual strengths rather than merely staying well. Fortigenesis is defined as the study of the origins of strengths (from Latin: fortis = strong and Greek: genesis = origin). Wissing and Van Eeden (1997, 2002) supported the fortigenesis paradigm and proposed that the term psychofortology should be used in the study of psychological well-being.

In attempting to unravel the mystery of the salutogenic orientation, Antonovsky (1979) was of the opinion that individuals develop resistance to stressors through life experiences. He identified several resources which could be effective in combating stressors, which included money, ego, strength, intelligence, knowledge, cultural stability, social support, immune potentiators and even magic. Antonovsky referred to these resources as “generalized resistance resources” or GRRs. Antonovsky found that the number of GRRs available to individuals to combat stress was infinite. He also found that the effectiveness of GRRs to combat stress varied significantly between individuals. This made it very difficult to generalize research and test GRRs. As a result, Antonovsky (1987) shifted the focus of his study to analysing what was common to all GRRs, which

was that they facilitated making sense of stressors. This he referred to as the sense of coherence.

### **2.1.2. History and development of sense of coherence**

In further research to conceptually clarify the salutogenic model, Antonovsky (1987) conducted a series of interviews with 51 individuals. The criteria for the selection of participants were that they should have experienced major trauma with inescapable consequences. These included major life changes, disability, loss of loved ones, difficult economic conditions, concentration camp incarceration, etc. The second criterion was that the person was considered to be functioning relatively well given the circumstances. The interviews were largely unstructured. The question how they saw their lives were posed to the interviewees. Upon analysis of the interview data, 16 participants were classified having a strong sense of coherence and 11 participants were classified having a weak sense of coherence.

Antonovsky (1987) identified three themes that were consistently found in the group with strong sense of coherence and were markedly absent in the group with a low sense of coherence. The themes included comprehensibility, manageability and meaningfulness.

Comprehensibility refers to the extent to which the participants perceived the undesired circumstances as making cognitive sense. Regardless of the undesirability of the situation (death, war, failure), participants with a strong sense of coherence viewed the situation as predictable, or when it did come as a surprise, that the circumstances were orderable, consistent and clear rather than random, accidental or inexplicable (Antonovsky, 1987).

Participants with a weak sense of coherence were repeatedly feeling like a victim, and even in extreme cases experienced paranoia. From the interviews, some individuals continually used phrases such as “everyone is against me”, “they screwed me”, “they are like the mafia”, “things happen to me”, “what can I do?”, “it is not my fault”, “all of life is a constant battle”, etc. (Antonovsky, 1987, p. 67–75). Participants with a strong sense of coherence experienced the events as challenges that could be met, or at worst that the

consequences of the event were bearable. From there the term manageability emerged.

Meaningfulness represents the motivational element. Those with a strong sense of coherence spoke of areas in their life that was important to them and made sense emotionally. When the unhappy experiences were imposed on participants with a strong sense of coherence, they willingly took up the challenge, were determined to seek meaning in it, and did their best to overcome it with dignity (Antonovsky, 1987).

### **2.1.3. The definition of sense of coherence and its components**

In the original definition, sense of coherence was termed as “a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic, feeling of confidence that one’s internal and external environments are predictable and that there is a high probability that things will work out as well as can be reasonably expected” (Antonovsky, 1979, p. 123).

Antonovsky (1987, p. 19) extended the definition of sense of coherence as “a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that the stimuli deriving from one’s internal and external environments in the course of living are structured, predictable, and explicable; the resources are available to one to meet the demands posed by the stimuli; and these demands are challenges, worthy of investment and engagement.”

Sense of coherence as global orientation, means that an individual’s sense of coherence is a dispositional orientation, rather than a response to a specific situation. Sense of coherence is, therefore, not seen as a specific coping mechanism, but rather a disposition which makes it easier for the individual to exploit resources to meet the demands imposed on him (Antonovsky, 1987). Strümpfer (1990) also concurred that sense of coherence is a disposition and not a state. Sense of coherence uses perception, memory and information processing to appraise the situation. This appraisal becomes habitual, leading to the development of sense of coherence through the repeated exposure to situations and sense making (Strümpfer, 1990).

Sense of coherence encompasses all spheres of life. It would be unlikely for a person to have a strong sense of coherence about one area of life, but a weak sense of coherence to other areas of life. However, individuals with a strong sense of coherence do not see the entire objective world as coherent, but rather create boundaries. What happens outside these boundaries (whether comprehensible, manageable or meaningful) is considered not important by the individual. An individual with a strong sense of coherence may, for example, not attach subjective value to politics, religion, or trade union activities and will therefore not invest energy in it. Antonovsky (1987), however, insists that it is not possible for an individual to preserve these boundaries when the following critical spheres are affected: inner feelings, immediate interpersonal relations, major activity and existential issues (*inter alia*, death, inevitable failures, shortcoming conflict, isolation, etc.).

The term “enduring” does not imply that there cannot be any alterations in an individual’s sense of coherence. The term “dynamic” refers to the fact that an individual’s sense of coherence is formed in childhood and is continuously tested, strengthened and changed throughout the individual’s life. A specific, positive or negative event can cause a temporary and/or minor change in a person’s sense of coherence (Antonovsky, 1979).

As mentioned before, three dimensions, namely comprehensibility (making sense of the stimuli in the environment), manageability (coping with the stimuli with available resources) and meaningfulness (identifying emotionally with events), arise from the definition of sense of coherence (Antonovsky, 1987; Coetzee & Cilliers, 2001).

Comprehensibility is defined by Antonovsky (1987) as the extent to which an individual perceive the external stimuli or stressors as being predictable and explainable. To an individual with high comprehensibility, external stimuli make cognitive sense, and are perceived to be orderly, predictable, consistent, structured and clear (Antonovsky, 1987; Strümpfer 1990). Life events and life in general seem to make sense (Strümpfer, 1990). When an individual’s comprehensibility is low, the individual perceive life events as random, chaotic, disordered, accidental and inexplicable (Antonovsky, 1987).

Manageability is defined as “the extent to which an individual perceives that the resources at one’s disposal are adequate to meet the demands posed by the various stimuli that bombard one” (Antonovsky, 1984, p. 118). High scores on manageability may indicate the extent to which an individual have confidence in his/her capacity to overcome the stressors. Low manageability is associated with feelings of helplessness.

According to Antonovsky (1984, p. 119), the meaningfulness component refers to “the extent to which an individual feels that life makes sense emotionally, rather than cognitively”. Meaningfulness recognises that individuals play a role in determining their own destiny and daily experiences. Individuals with high scores on meaningfulness view problems faced as challenges worthy of investing energy, commitment and engagement (Antonovsky, 1987).

According to Antonovsky (1987), the three components of sense of coherence are inextricably intertwined and inter-correlations between the components are very high. However, Antonovsky (1987) did not view the three components of sense of coherence necessarily as of equal importance. In his opinion, the motivational component of meaningfulness seems most crucial (Antonovsky, 1987). Without the motivation, one would not invest effort to seek the resources to manage the stressor and will ultimately stop responding to the stimuli. If an individual is able to comprehend the situation and has the resources to manage it, but is not motivated, the individual will cease to understand the situation and loose the command of resources. Conversely, an individual with low comprehensibility and manageability, but who have high motivation through meaningfulness, may show profound spirit to overcome the adverse event.

Comprehensibility is deemed by Antonovsky (1987) as next in importance. High manageability is dependent on suitable understanding of the situation and it would be rare for a person to believe he/she has the ability to address a situation that he/she does not comprehend. High comprehensibility but low manageability, however, will lead to strong pressure to change in the direction determined by meaningfulness. For example, if a person fully comprehends the situation and strongly cares about it, he/she will have the motivation to seek the resources to cope with it.

Manageability is also important. If an individual does not believe that resources to address the stimuli are at his/her disposal, meaningfulness will be lessened and coping efforts weakened (Antonovsky, 1987). Despite the order of importance that Antonovsky attached to the components, successful coping depends on sense of coherence as a whole.

#### **2.1.4. Sense of coherence in the workplace**

Strümpfer (1990) argue that most adults spend the largest portion of their waking hours at work and, therefore, work becomes a dominant source of external and internal stimuli to be comprehended, managed and made meaningful. A person with a high sense of coherence in the workplace is likely to make cognitive sense of the workplace and experience it as ordered, structured and predictable. The high sense of coherence employee will believe in his/her personal attributes and internal resources to cope with the day-to-day demands and meet challenges. Lastly he/she will be able to view work challenges as worthy of engagement and investment (Coetzee, Viviers, & Visser, 2006; Strümpfer, 1990).

Strümpfer (1990) argues that a person with a strong sense of coherence in the workplace would experience productive performance, recognition, reward and promotion. Sense of coherence is directly related to different aspects of successful living including career effectiveness (Strümpfer, 1990). Individuals with a strong sense of coherence seem to cope better with change, perform better and show higher levels of resilience and adaptability than co-workers with a weak sense of coherence (Coetzee & Cilliers, 2001; Strümpfer, 1995). Individuals with a high sense of coherence are also more able to mobilise resources in their workplace, than their colleagues with a low sense of coherence (Kalimo & Vuori, 1991).

Conversely, a person with low sense of coherence would find it hard to excel in the stressful business environment as he/she may suffer from information overload, have difficulty to interpret his/her work load and feel like a victim of his/her circumstances (Strümpfer, 1990).

### **2.1.5. Sense of coherence in mid-level managers.**

Managers are particularly prone to stress, and for that reason they are in need of coping skills or life orientations to assist them to cope with the daily demands. Sense of coherence is seen as a crucial life orientation for managers in order to positively facilitate coping (Coetzee et al. 2006). Feldt, Kivimaki, Rantala, and Tolvanen (2004) found that managers' sense of coherence was relatively high compared to the mean sense of coherence of other studies.

Coetzee et al. (2006) found a strong correlation between sense of coherence and managerial motivation. Coetzee et al. (2006) postulated that individuals who have high intrinsic motivation will strive towards furthering their careers and aspire to be promoted. Coetzee et al. (2006) found a high sense of coherence in managers, which is aligned with previous research.

In a study by Gropp, Geldenhuys, and Visser (2007), managers obtained higher scores on comprehensibility and meaningfulness than non-managers. The managers viewed stimuli as clear, structured and consistent and that life makes sense emotionally, more so than non-managers.

Apart from sense of coherence, the research explores another salutogenic construct, namely work locus of control. A brief literature overview of the locus of control and work locus of control constructs follows below.

## **2.2. LOCUS OF CONTROL**

The concept of locus of control was developed in 1966 by Rotter and has to do with a person's expectation of reinforcement of behaviour (Rotter, 1966). This research focuses on the salutogenic functioning of locus of control, and salutogenesis is thus considered as the primary paradigm. However, in investigating the history and development of locus of control, it is important to note that locus of control originated from the behaviourism paradigms, specifically the attribution and social learning theories.

### **2.2.1. History and development of the construct locus of control**

The locus of control concept originated from the attribution (Heider, 1958) and social learning (Phares, 1976; Rotter, 1975) theories, but were later included as a salutogenic construct (Snyder & Lopez, 2009; Strümpfer, 1990, 1995). A brief discussion on the above theories follows below.

#### *2.2.1.1 The Attribution theory*

The founder of the attribution theory is generally recognized to be Fritz Heider (1958). Heider's (1958) attribution theory attempted to understand how individuals interpreted information from the environment (internal and external) to find causal explanations for events (Bergh & Theron, 1999; Bothma & Schepers, 1997; Coetzer & Schepers, 1997). The attribution theory rests on three assumptions, namely that individuals attempt to determine the causes of their own behaviour; that individuals are able to describe the causal explanations of behaviour effectively and systematically; and that these attributions will influence the individual's future behaviour (Bergh & Theron, 1999; Bothma & Schepers, 1997; Coetzer & Scheepers, 1997; Heider 1958). The process of attachment of causal explanations to behaviour is referred to as attribution. The attribution process attempts to determine why certain events and behaviours lead to specific outcomes (Bergh & Theron, 1999). According to Heider (1958), the causes of behaviour can be ascribed to internal determinism (i.e. an individual's internal feelings, motives and attitudes) or external determinism (i.e. the external environment, significant others or external forces). Roediger, Capaladi, Paris, and Polivy (1991) refers to above determinisms as dispositional causes (internal determinism) and situational causes (external determinism) respectively. It is important to note that it is the individual's perception of the causes of behaviour, rather than the actual causes of behaviour, that determines the individual's future behaviour (Bothma & Schepers, 1997). Over time, an individual may adopt a primary pattern for interpreting the perceived causes of events and behaviour, which could be either internal causes (dispositional) or external causes (situational) (Roediger et al., 1991). This corresponds with Rotter's (1966) description of internal and external loci of control. A person may for instance ascribe poor performance in a work setting to his/her own lack of preparation and/or ability (internal locus of

control), whilst another may ascribe the poor performance on not having the right information, support, unfair boss, etc. (external locus of control). A person with an internal locus of control will attribute his/her behaviour to causes within his/her control, personal ability and disposition, whilst a person with an external locus of control will ascribe his/her behaviour to causes out of his/her control (luck, fate, etc.) (Phares, 1976).

#### *2.2.1.2 The Social Learning Theory*

According to the social learning theory, it is important to consider the following three variables in predicting behaviour: expectation, reinforcement and psychological situations (Phares, 1976). Rotter (1975) described expectation as the individual's belief that a specific reinforcement will follow a specific behaviour. The potential for a person to behave in a particular way in a specific psychological situation is directly related to the expectation the person holds that the given behaviour will lead to a desired reinforcement (Rotter 1975). These expectations of reinforcement are built over time by means of subjective interpretation of the environment, learning and experience (Coetzer & Schepers, 1979; Rotter 1975; Rotter, Chance, & Phares, 1972). Reinforcement is described as the expected reward for a specific behaviour, which increases the likelihood that the behaviour will be repeated in similar situations in future (Coetzer & Schepers, 1997; Rotter, 1975).

When predicting behaviour, one should consider the individual's entire psychological situation, and not only focus on a single stimulus (Rotter et al., 1972). The psychological situation represents the internal or external environment in which the behaviour occur (Phares, 1976). O'Brien (1986) described locus of control as the degree to which reinforcement is within a person's external or internal control. Rosalak and Hampson (1991) postulated that the degree to which an individual will expect that reward will follow his/her behaviour is inversely related to the degree to which he/she believes that the reward is controlled by powers outside of his control.

A person with an internal locus of control believes that reinforcement (positive reward) is determined by internal sources such as ability. Conversely, a person with external locus

of control believes that reinforcement is only determined by other persons, social structure, luck or fate (O'Brien, 1996).

### **2.2.2. Locus of control as a salutogenic construct**

Locus of control is regarded by most of the latest research as a salutogenic construct (Gropp et al., 2007; Snyder & Lopez, 2009; Strümpfer, 1990, 1995). Salutogenic constructs such as sense of coherence, hardiness, self-efficacy, and locus of control are commended for their ability to help the individual cope with the stressors of daily life and stay well (Strümpfer, 1990). Internal work locus of control showed a significant positive correlation with well-being (Daniels & Guppy, 1994; Gropp et al., 2007; Snyder & Lopez, 2009; Strümpfer, 1990, 1995). Gropp et al. (2001) pointed out that individuals with a sense of inner control are more likely to collect information about unhealthy situations, which will enable them to improve their habits and take preventative care.

### **2.2.3. Definition of locus of control**

The origin of the concept locus of control stems from Rotter's (1966) attempt to understand why individuals fail to respond in a predictable manner to reinforcement. In some of the earliest definitions, Rotter (1966) described locus of control as a personality variable which indicate the degree to which individuals exercise control over their environment. Leftcourt (1966) described control as the extent to which an individual accept personal responsibility for events in their life. Rotter (1966, 1992) distinguished between individuals with an external locus of control (also referred to as externals) and individuals with an internal locus of control (internals). Individuals with an external locus of control believe that reinforcement or outcomes are unpredictable and are based on chance, luck, fate, or due to significant others. Individuals with an internal locus of control on the other hand, believe that reinforcement or outcomes are dependent of their own behaviour or personal characteristics (Rotter, 1966, 1992). Spector (1988) defined locus of control as the generalised expectation that rewards and outcomes in life are controlled either by one's own actions (internal locus) or by external forces (external locus). Schepers (2005) described internal control as the individual's belief that outcomes are a consequence of his/her own behaviour, and external control as the

individual's belief that outcomes are independent of his/her behaviour. Schepers (2005) included autonomy to the locus of control dimensions, which he defined as the individual's attempt to master the environment (Schepers, 2005; Schepers et al., 2006).

Several researchers debated whether an individual's locus of control was a fixed intrinsic personality characteristic or if it could be moulded by the external environment and/or circumstances. A brief discussion on the debate follows below.

#### **2.2.4. Work locus of control**

Maram and Miller (1998) suggested that psychologists and sociology theorists are generally in two camps with regard to the causes of behaviour. Theorists supporting type trait and psycho-dynamic models of personality assume that behaviour is determined by stable personality traits and dispositions, which is constant, lasting and can be generalised across situations. On the other hand, some social learning theorists support the notion that behaviour is determined by the circumstances and the environment and can be changed to suit the circumstances (Maram & Miller, 1998). Endler (1976) and Maram and Miller (1998) supported a more complex view of behaviour causation, namely the interactionist perspective. In this perspective, both the dispositional and situational causes of behaviour are considered. Maram and Miller (1998, p. 48) explained it as follows: "In terms of the interactionist perspective, notions of stability (generality) in personality and variability (specificity) are a matter of degree, not kind, much like a continuum".

Locus of control was originally conceptualised as a general expectancy that rewards are controlled by an individual's own actions (internals) or by other forces (externals) (Rotter, 1966). Although this definition alludes to a more dispositional trait, Rotter supported the interactionist position and stated that the unit of investigation for the study of personality is the interaction of the individual and his/her environment. From this, it was denoted that locus of control can be domain specific, i.e. an individual can have an internal locus of control in one area of his/her life, whilst having an external locus of control in another.

The Work Locus of Control Scale (WLCS), developed by Spector (1988), is the only domain specific measure of locus of control in organisational settings, and is specifically concerned with organisational rewards (i.e. salary increases, promotions, advancement, etc.) (Maram & Miller, 1998).

Kinicki and Vecchio (1994), Maram and Miller (1998) and Spector (1988) found higher correlations between work locus of control and organisational variables, as opposed to the correlations between more generalized locus of control scales and organisational variables. The work locus of control scale may predict work behaviour more accurately than general locus of control scales (Maram & Miller, 1998).

### **2.2.5. Locus of control in the workplace**

Spector (1982) found that internal control were associated with high commitment and involvement, as well as reduced levels of absenteeism and turnover. This may be due to a positive correlation between internal control and job satisfaction (Daniels & Guppy, 1994; Labuschagne, Bosman, & Buitendach, 2005; Pretorius & Rothmann, 2001; Spector, 1982). Internals are also likely to perform better as they are likely to have strong performance motivation (Coetzee & Cilliers, 2001; Le Roux, Schmidt, & Schepers, 1997; Strümpfer, 1995). Taylor, Schepers, and Crous (2006) established that individuals with internal locus of control are more likely to experience flow and autonomy in their work, i.e. an optimal state of work where they are able to achieve peak performance without coaching or interference. Kossuth and Cilliers (2002) found that internal locus of control showed positive correlations with decision-making, role clarity, responsibility, job satisfaction and contribution to profits.

Individuals with an internal locus of control tend to cope better with change and show higher levels of resilience and adaptability than co-workers with an external locus of control (Coetzee & Cilliers, 2001; Strümpfer, 1995). According to Judge, Locke, Durham, and Kluger (1998), individuals with an internal locus of control are likely to feel that situations in the work context are within their personal control, which makes it easier to manage. Internals will be less inclined than externals to manage their frustrations within organisations by withdrawing or reacting aggressively (Spector,

1982).

### **2.2.6. Locus of control in mid-level managers**

Klein and Wasserstein-Warnet (2000) found that individuals with an internal locus of control are more likely to believe in their ability to achieve their objectives and to take responsibility for their job success. They tend to be actively involved in planning, implementation of projects and in transforming their environment, making them ideally suited to leadership roles.

Gropp et al. (2007) found that managers with an internal locus of control are less inclined to ascribe their performance to matters outside their control. They tend to trust their own ability, function independently and confidently, and manage to solve their own problems (Gropp et al., 2007). Van Staden, Schepers, and Rieger (2000) found a statistical significant correlation between internal locus of control and transformational leadership, which is associated with individual and organisational performance.

The literature review on sense of coherence and work locus of control concludes the discussion on the salutogenic constructs. A brief literature review on the burnout phenomenon will be explored next.

## **2.3. BURNOUT**

Schaufeli and Enzmann (1998) compared burnout to the analogy of an empty car battery. It is a gradual process in which more energy has been consumed than was produced over a long period of time. Burnout forms part of the pathogenic paradigm and is considered to be the result of prolonged exposure and the inability to cope with occupational stressors.

### **2.3.1. Burnout as part of the pathogenic paradigm**

The study of burnout forms part of the pathogenic paradigm. The pathogenic paradigm is concerned with the origins of disease, i.e. why people fall ill and develop specific

diseases (Antonovsky, 1987). Warr (2002) identified four dimensions of work-related well-being, namely pleasure-displeasure, anxiety-comfort, enthusiasm-depression and vigour-fatigue. Pleasure, comfort, enthusiasm and vigour correlates positively with work-related well-being and are, therefore, part of the salutogenic paradigm. Conversely, displeasure, anxiety, depression and fatigue are inversely related to well-being, and are, therefore, considered pathogenic in nature. Rothmann (2008) related burnout to the vigour-fatigue dimension of Warr's (2002) work-related well-being model. Burnout leans towards the fatigue side of the vigour-fatigue continuum (Rothmann, 2008) and is, therefore, pathogenic to the individual's well-being.

### **2.3.2. History and development of the burnout concept**

Herbert Freudenberger is generally considered to be the originator of the burnout syndrome. Freudenberger volunteered as a psychiatrist in an alternative drug addiction facility and noticed several of his work colleagues experiencing a gradual depletion of energy and motivation. These mental and physical symptoms of exhaustion usually occurred approximately one year after commencing service. Freudenberger published detailed descriptions of his observations in his 1974 paper entitled "Staff burn-out" (Freudenberger, 1974). The paper sparked wide interest in the concept of burnout, as several individuals, especially in the human services careers, recognised or identified with the symptoms (Schaufeli & Enzmann, 1998).

During the same period, Christina Maslach (1976, 1982) was busy researching the way in which health care workers dealt with stressful situations in their work. An area of particular interest to Maslach was the phenomenon of using cognitive strategies, such as dehumanisation and detached concern, as a form of defence against the stressors. In her interviews, health care workers reported symptoms which could be clustered into three subdimensions, namely emotional exhaustion, negative affect for patients, and subjective deterioration of personal competence. Christina Maslach adopted the term 'burnout' for the phenomenon (Schaufeli & Enzmann, 1998).

Maslach and Jackson (1981, 1986) initially claimed that burnout occurs exclusively in human-orientated occupations such as health care, social work and education. According

to Maslach (1976, 1982), burnout is a response to the chronic emotional strain of dealing with troubled people. Burnout was then initially almost exclusively studied in human services professions, which reinforced burnout as a typical helper syndrome (Schaufeli, 2003). Most assessments of burnout in literature were conducted by means of the Maslach Burnout Inventory (MBI), two versions of which were originally: the Human Services Survey (MBI-HSS) and the Educators Survey (MBI-ES) (Schaufeli, 2003).

Several researchers attempted to observe the phenomenon in occupations other than human services (Cordes & Dougherty, 1993; Evans & Fisher, 1993; Golembiewski, Munzenrider, & Stevenson, 1986; Pines, Aronson, & Kafry, 1981) by adapting the MBI HSS/ES survey, with limited success (Schaufeli, 2003).

Critics of the multidimensional model of burnout as conceptualised by Maslach argued that at least one of the dimensions underlying the MBI in human services samples could not be generalized to non-human services populations. Evans and Fisher (1993), for instance, found that depersonalization did not form a meaningful factor for a sample of computer company employees. Garden (1987) argued that whilst exhaustion corresponded to concepts in stress literature, depersonalization and a lack of personal accomplishment did not. Garden argued that people who chose to work in human services shared typical personality characteristics, which would make them more prone to experiencing depersonalization and lack of personal accomplishment (Evans & Fisher, 1993; Garden, 1987).

Maslach et al. (1996) and Maslach and Leiter (1997) extended the concept of burnout beyond the human services occupations with the development of the MBI General Survey (MBI-GS), which could be used universally. Burnout was redefined as a crisis in an individual's relationship with work rather than with people at work, and included more general subdimensions, namely exhaustion, cynicism and professional efficacy.

### **2.3.3. Definition of burnout**

Maslach (1976, 1982) originally defined burnout as a syndrome of emotional exhaustion, depersonalisation and reduced accomplishment that can occur amongst individuals who

work with people.

Pines et al. (1981) equated burnout to tedium and stated that both are states of physical, emotional and mental exhaustion. Burnout, according to Pines et al. (1981), is defined as the result of constant or repeated emotional pressure associated with an intense involvement with people over long periods of time. Burnout is characterized by the following: physical depletion, emotional drain, feelings of helplessness and hopelessness, development of negative self-concept and negative attitudes towards work, life and other people. Pines et al. (1981, p. 15) further described burnout as the “sense of distress, discontent and failure in the quest for ideals”.

Maslach et al. (1996) and Maslach and Leiter (1997) extended the definition of burnout to apply to job categories beyond the human services occupations. The three subdimensions of burnout were renamed exhaustion, cynicism and professional efficacy. Maslach, Schaufeli, and Leiter (2001) defined the three subdimensions as follows: exhaustion (perceived reduction in emotional resources), cynicism (negative and insensitive attitudes towards work) and reduced professional efficacy (perceived incompetence, lack of achievement and under productiveness).

Schaufeli and Enzmann (1998 p. 36) supported the application of burnout to non-human services occupations and defined 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”. In 2003 however, Schaufeli questioned the inclusion of professional efficacy as a dimension of burnout. He argued that professional efficacy is a personality trait which could contribute to the incidence of burnout, rather than being an outcome of burnout (Schaufeli, 2003).

#### **2.3.4. Development of burnout**

Maslach (1982) believed that the burnout syndrome is a response to chronic stress, rather than occasional crises. According to Lazarus and Folkman (1984), occupational stress occurs when job demands tax or exceed the person’s adaptive responses. Cooper (2000)

defined stress as the process of interaction between the individual and environment, where the individual does not see the resources available to address the perceived threats. Work stress was defined by Kreitner and Kinicki (2004, p. 692) as “an adaptive response, mediated by individual characteristics and/or psychological processes, that is a consequence of any external action, situation, or even event that places special physical and/or psychological demands upon a person.”

Maslach (1982) explained that a person’s tolerance to stress gradually wears away under the continued assault of emotional stressors. Brill (1984) agreed with this viewpoint and defined burnout as a type of prolonged job stress or the consequence of chronic stress. Levert et al. (2000) described burnout as the end result of consistently unsuccessful attempts by the individual to mediate stressors in the environment. Storm and Rothmann (2003) distinguished between occupational stress and burnout as follows: Occupational stress refers to the temporary adaptation process to an imbalance between job demands and the response capability of the worker. Burnout is the final stage in a breakdown in adaptation that results from the long-term imbalance of demands and resources, and is accompanied by chronic malfunctioning at work (Storm & Rothmann, 2003). In other words, when there is an imbalance between demands and resources in the workplace, a person may experience physical and emotional symptoms of occupational stress as they attempt to adapt to the imbalance. If the imbalance between demands and resources is prolonged, the individual may find it increasingly difficult to adapt and subsequently burn out.

In terms of the aetiology of the burnout syndrome, Maslach (1976, 1982) and Pines et al. (1981) observed the following pattern in the development of burnout in human services workers: When human services workers get overly emotionally involved with patients and starts to feel overwhelmed by the emotional demands imposed on them, a pattern of overload and subsequent exhaustion emerges over time. They may start to feel as if their emotional resources are depleted and that they are no longer able to deal compassionately with others’ problems. As a defence mechanism against the emotional demands imposed on them, individuals may start to pigeonhole people into categories and react to the category rather than the individual in an attempt to create emotional distance and detachment from the patient/recipient. This dehumanized approach to people’s problems

signals the second aspect of burnout namely depersonalization. The term depersonalization was later adapted to cynicism, to accommodate non-human services occupations. Burned out individuals may start to expect the worst from people, become detached, or even actively dislike people. Increased negative reactions to people may also include derogatory comments, refusal to be courteous, and ignoring patient/recipient demands (Maslach, 1976, 1982). This is where most individuals start to experience personal and professional crises. They experience guilt about the way they mistreat others and attribute their attitude to a personality and/or ability failure. This leads to the third aspect in the definition of burnout, namely reduced personal accomplishment.

Pines et al. (1981, p. 3) referred to the insidious nature of the development of burnout as follows: “It usually does not occur as the result of one or two traumatic events, but sneaks up through a general erosion of the spirit.” Pines et al. (1981) and Schaufeli and Enzmann (1998) stated that burnout seemed to impact on individuals who had been the most idealistic and enthusiastic and who possesses a strong desire to give of themselves.

In terms of the sequence of the burnout dimensions, three approaches were promulgated. Leiter and Maslach (1988) explained the causality of burnout as follows: When a person becomes exhausted, he/she may become detached as a (dysfunctional) way to cope with the fatigue. Detachment impairs performance, which in turn leads to feelings of reduced accomplishment. The sequence of symptoms of burnout is thus seen as follows: exhaustion – depersonalization/cynicism – reduced efficacy. Golembiewski et al. (1986) view the sequence of symptoms as depersonalisation, followed by exhaustion and reduced personal accomplishment respectively. A third sequence, proposed by Van Dierendonck, Schaufeli and Buunk (2001), argues that a person lacking professional competence will deal with recipients inadequately, and will subsequently become exhausted (reduced personal efficacy – depersonalization – exhaustion).

### **2.3.5. Symptoms of burnout**

Burnout is considered a syndrome consisting of many symptoms, of which exhaustion is most prevalent. Pines et al. (1981) described an array of symptoms, which include feelings of general depression and dissatisfaction; physical, emotional, and psychological

fatigue; feelings of helplessness, hopelessness and a lack of enthusiasm about work and life in general. Schaufeli and Enzmann (1998) distinguished between affective, cognitive, physical, behavioural and motivational symptoms of burnout. Cilliers (2002) added interpersonal symptoms and work-related symptoms.

Physical symptoms can include headaches, nausea, dizziness, restlessness, nervous tics, muscle pains (particularly neck and back pain), hyperventilation, anxiety, shortness of breath, chronic fatigue, drowsiness, shortness of breath, bodily weakness. The burned out individual may also experience sexual problems, sleep disturbances and/or sudden loss or gains of weight. Psychosomatic disorders may appear, which could include ulcers, gastric intestinal disorders, coronary heart disease, prolonged colds and flu, susceptibility to viral infections and more (Cilliers, 2002; Golembiewski et al., 1986; Maslach, 1982; Maslach & Jackson, 1981; Schaufeli & Enzmann, 1998).

Affective or emotional symptoms include a generalized depressed mood; undefined fears, anxiety and nervous tension, irritability, oversensitivity, emotional aloofness, anger bursts as well as low job satisfaction (Cilliers, 2002; Maslach, 1982; Maslach & Jackson, 1981; Schaufeli & Enzmann, 1998).

Cognitive symptoms include perceptions of helplessness, hopelessness and powerlessness. Burnout sufferers may experience loss of control and meaning, reduced frustration tolerance as well as poor job-related self-esteem. Cognitive symptoms may also include impaired concentration, which may manifest in making mistakes, forgetfulness, reduced ability to deal with complexity and difficulty making decisions. A burned out individual may become disengaged, distrusting, hypercritical, paranoid and/or derogatory (Cilliers, 2002; Schaufeli & Enzmann, 1998).

Behavioural symptoms are primarily caused by the increased level of arousal and a person may display procrastination, doubt and indecisiveness. Impulsivity and diminished impulse control may lead to aggressiveness, violent behaviour, increased risk taking, accident proneness, overeating and the excessive consumption of stimulants, such as coffee, tobacco, tranquilizers and/or illicit drugs. In the organisational setting the individual may exhibit reduced effectiveness, poor work performance, minimal

productivity, conflict and overall negativity. Withdrawal behaviours such as tardiness, clock watching, absenteeism, scepticism and inappropriate resistance to change may occur. The burned out employee have a severely negative and demoralising impact on co-workers, which makes him/her very unpopular. This in turn strengthens the burnout victim's feelings of mistrust, isolation and paranoia (Cilliers, 2002; Maslach, 1982; Maslach & Jackson, 1981; Schaufeli & Enzmann, 1998).

Motivational symptoms include the diminishment of intrinsic motivation, zeal, enthusiasm interest and idealism. Work motivation and professional initiative is weak (Cilliers, 2002; Schaufeli & Enzmann, 1998). Interpersonal symptoms were added by Cilliers (2002) and included decreased involvement and interest in others, isolation, withdrawal, irritability, hostility indifference, negativism, suspicion, stereotyping and hostility. Work-related symptoms included reduced effectiveness, productivity and performance accompanied by lowered job satisfaction and a sense of failure and meaninglessness (Cilliers, 2002).

### **2.3.6. Burnout in the workplace**

Despite the detrimental effects of burnout for the individual, including depression, sense of failure, fatigue and loss of motivation (Storm & Rothmann, 2003), it also has detrimental effects for the organisation (Schaufeli & Enzmann, 1998; Storm & Rothmann, 2003). Some of the organisational outcomes of burned out employees include turnover, absenteeism, lowered productivity (Maslach & Jackson, 1986) as well as reduced commitment, inability to make decisions, poor service delivery and lower tendency to initiate interaction with clients (Levert et al., 2000).

Etzion (1984) referred to various stress-producing variables in the workplace, including overload; social overextension bureaucratic pressures; lack of feedback, autonomy and appreciation, which could lead to burnout.

Schaufeli and Enzmann (1998) grouped organisational stressors as follows: Job-related and client-related stressors are categorized as job demands, whilst social support and self-regulation are considered job resources. Maslach and Jackson (1986) proposed that the

presence of job demands such as work overload and personal conflict, paired with the absence of resources such as control, coping, social support, autonomy and participation, may increase the prevalence of burnout. Demerouti, Bakker, Nachreiner, and Schaufeli (2001) referred to the above as the Job Demands-Resources (JD-R) model.

Job demands include aspects of the job that require sustained physical or mental effort and are associated with physiological and psychological costs (Demerouti et al., 2001; Rothmann et al., 2003; Schaufeli & Enzmann, 1998). According to Schaufeli and Enzmann (1998), work load contributed significantly to the variance of burnout, particularly emotional exhaustion. Role conflict (i.e. when a person experiences conflicting demands) and role ambiguity are moderately to highly correlated with burnout (Miller, Ellis, Zook, & Lyles, 1990; Schaufeli & Enzmann, 1998). Role overload is defined by Masia and Pienaar (2011, p. 2) as “the degree to which inadequate time, training and resources affect performance”. Employees are also more likely to experience burnout when they work more hours per week and have more interaction with clients (Schaufeli & Enzmann, 1998).

Job resources refer to physical, psychosocial or organisational aspects of the job that may assist in meeting task requirements and reduce the associated physiological or psychological cost (Demerouti et al., 2001). Job resources include social support, supervisory support, interpersonal relationships, feedback, control, autonomy and participation (Etzion, 1984; Maslach & Jackson, 1986; Rothmann et al. 2003; Schaufeli & Enzmann, 1998). A lack of adequate job resources is strongly related to cynicism and diminished professional efficacy (Rothmann et al., 2003; Schaufeli & Enzmann, 1998).

A lack of social support, especially from supervisors, is positively related to burnout (Schaufeli & Enzmann, 1998). Etzion (1984) found that the effect of occupational stress on burnout was moderated by social support. The likelihood of a person developing burnout as a result of being exposed to stressors is decreased if he/she has adequate support from the social environment. Interpersonal relationships in the workplace as well as lack of feedback may also contribute to burnout (Maslach, 1982).

When a person is unable to regulate his/her work environment, participate in decision-

making and have low job autonomy, burnout is more likely to occur (Schaufeli & Enzmann, 1998). Maslach (1982) stated that burnout is high when people lack a sense of control. Lack of control may occur when one has no direct decision-making authority or autonomy over one's job, for instance being told what to do, when to do it, or how to do it. The person has no opportunity to escape the stressful situation, which contributes to feelings of helplessness, frustration, anger and ineffectiveness.

### **2.3.7. Burnout in mid-level managers**

Strydom and Meyer (2002) found that mid-level managers are exposed to various sources of job stress. Excessive workload (job demands) was found to contribute strongest to job stress experienced by mid-level managers. Other causes of job stress for mid-level managers included time pressure, long work hours, work-related responsibilities, manpower shortage, budgets, delayed work, incompetent subordinates, organisational changes and equipment breakage (Strydom & Meyer, 2002). The stress of occupying a senior position and managing the accompanying expectations from executive management, as well as the stress of being accountable for the deliverables of subordinates, may become overwhelming for some managers (Strydom & Meyer, 2002). The continued exposure to occupational stress in the absence of adequate coping mechanisms may make some mid-level managers vulnerable to burnout.

A second contributor to possible burnout in mid-level management is the positive correlation between high education and burnout. Most mid-level managers are required to have acquired some further education. Schaufeli and Enzmann (1998) proposed that higher education leads to higher incidence of burnout, possibly due to higher expectations. It should be noted, however, that in the mining industry, the required education for mid-level managers may be less than in other industries. This is especially true for production and maintenance disciplines, where a history of illiteracy in employees still prevail in South Africa.

## **2.4. INTEGRATION OF THE VARIABLES**

When faced with stressors, the individual weighs the demands/threats of the situation with the available resources, and forms an opinion of its significance. This appraisal of the risk differs from person to person (Rothmann et al., 2003). Even if two people appraise the risk similarly they may display markedly different reactions to the same stressor. The question can be asked if certain salutogenic attributes make it easier for individuals to cope with stressors in order to prevent burnout. This part of the literature review investigates the way in which the salutogenic constructs, sense of coherence and work locus of control, assist the individual to cope with stressors and subsequently prevent burnout caused by prolonged exposure to stressors.

### **2.4.1. The relationship between sense of coherence and burnout**

Feldt (1997) found that a high sense of coherence is negatively related to work stress and positively related to general well-being. A strong sense of coherence may help employees understand stressors and regard them as manageable and meaningful (Van der Colff & Rothmann, 2009). Conversely, a weak sense of coherence may lead to occupational stress and ultimately to burnout.

Rothmann et al. (2003) confirmed a moderating effect of sense of coherence on the experience of job stress and burnout in a sample of local government employees. Van der Colff and Rothmann (2009) found, in a sample of registered nurses, that those with a strong sense of coherence were able to cope better with occupational stress due to job demands and lack of organisational support. Following the argument that burnout stems from the individual's prolonged inability to cope with stressors, it is thus no surprise that Van der Colff and Rothmann (2009) found that a strong sense of coherence predicted lower levels of emotional exhaustion and depersonalization.

Research indicate overwhelming support for the mitigating impact of sense of coherence on burnout with most research reporting statistically significant negative correlations between sense of coherence and exhaustion and depersonalisation, and statistically significant positive correlations between sense of coherence and professional efficacy.

These correlations were confirmed by Gilbar (1998) in a sample of social workers, Levert et al. (2000) in a sample of nurses, Rothmann et al. (2001) in a corporate pharmacy group, Rothmann et al. (2003) in a local government group, Rothmann (2004) in a sample of senior managers, Van Jaarsveld (2004) in a sample of engineers and scientists, Harry and Coetzee (2011) in a higher education institution call centre, and Viljoen (2013) in an engineering organisation, to name but a few.

From the above-mentioned literature studies, it becomes clear that an individual with a weak sense of coherence is likely to experience exhaustion, cynicism and reduced professional efficacy, associated with burnout. It is also plausible that a strong sense of coherence could provide a buffer against occupational stress and subsequent burnout.

#### **2.4.2. The relationship between work locus of control and burnout**

Employees with an external locus of control reported a greater amount of occupational stress in a study by Daniels and Guppy (1994). In a study of 2 091 first-year students, Schepers et al. (2006) found that internal locus of control correlated positively with psychological wellness and negatively with stress management. The relationship between external control and occupational stress may expose externals to the incidence of burnout.

Glass and McKnight (1996) and Schaufeli and Enzmann (1998) found that individuals with an external locus of control are more emotionally exhausted, depersonalised and experience reduced feelings of personal accomplishment. Rothmann and Malan (2003) measured positive correlations between external locus of control and exhaustion and cynicism in a sample of social workers, as well as an inverse relation with professional efficacy. These correlations were confirmed by Rothmann (2004) in a sample of senior managers in a manufacturing organisation. In a recent study in Turkey, Akça and Yaman (2010) found that teachers with external locus of control are more likely to experience burnout.

Rothmann (2004) concluded that senior managers with a strong sense of coherence and an internal locus of control are less likely to experience burnout, compared to those who lack these psychological strengths.

## **2.5. CHAPTER SUMMARY**

In Chapter 2, the variables sense of coherence, work locus of control and burnout was conceptualised. The paradigmatic orientation, history, development, definitions and characteristics of each of the constructs were portrayed, as well as the way in which the variables manifest in the organisation and in mid-level managers. The Chapter was concluded by a discussion on the interrelations between the sense of coherence, work locus of control and burnout constructs.

## CHAPTER 3

### RESEARCH ARTICLE

#### SENSE OF COHERENCE, WORK LOCUS OF CONTROL AND BURNOUT AMONGST MID-LEVEL MANAGERS IN UNDERGROUND COAL MINING OPERATIONS IN MPUMALANGA

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#### **Abstract:**

**Orientation:** Existent research highlights the contribution of salutogenic strengths in the wellness of employees. Sense of coherence and locus of control, as salutogenic constructs, are implicated in the prevention of burnout.

**Research purpose:** The objective of the study was to investigate the relationship between sense of coherence, work locus of control and burnout amongst mid-level managers in underground coal mining, and to determine whether sense of coherence and work locus of control can predict the level of burnout in the sample.

**Motivation for the study:** Given the crucial role that mid-level managers play in ensuring the survival of mining organisations, as well as the numerous stressors they are exposed to, research on the wellness of this specific group is vital. The relationship between sense of coherence, work locus of control and burnout, can provide insight on the value of leveraging these salutogenic constructs in the prevention of burnout.

**Research design, approach and method:** A cross-sectional survey design was used and three questionnaires were administered, namely the Orientation to Life questionnaire, The Maslach Burnout Inventory – General Survey and the Work Locus of Control Scale.

The sample consisted of 131 mid-level managers from a leading coal mining organisation in Mpumalanga, South Africa.

**Main findings:** The results indicated low to moderate levels of exhaustion, cynicism and reduced professional efficacy, as subdimensions of burnout, in the sample group. Sense of coherence and internal work locus of control showed statistically significant negative correlation with burnout. The two salutogenic constructs predicted a significant portion of the variance in burnout in the sample group.

**Practical/managerial implications:** By understanding the incidence of burnout and the salutogenic characteristics that may mitigate its occurrence, one can attempt to provide mid-level managers with the necessary skills and support to improve their general well-being.

**Contribution/value-add:** The results of the study contribute to knowledge about the way in which the constructs sense of coherence, work locus of control and burnout manifest and interrelate amongst mid-level managers in underground coal mining operations in Mpumalanga. The research also provides understanding of the predictive nature of the two salutogenic constructs in the incidence of burnout.

**Key words:** Occupational Stress; Burnout; Salutogenesis; Sense of coherence; Work locus of control; Mid-level managers; Underground Coal Mining

## **Introduction**

The South African mining industry is under severe pressure to remain competitive due to stagnating commodity prices, coupled by increasing input costs. Input costs superseded inflation as a result of high energy cost, demands to fulfil social and community needs, as well as increasing salary demands from mine workers and unions (Campbell, 2002; Deloitte, 2013). Similar to most industries in South Africa, the mining industry's production capability is further hampered by skills shortages, HIV/Aids, ill-health, labour unrest and strikes (Campbell, 2002; Donoghue, 2004). In the coal mining industry, the challenge to remain profitable is no different. Management is tasked to achieve high

production targets to increase profitability on the one hand, but also to meet the recent increase in consumer demand in the coal-to-liquid (petrochemical) and energy generating (electrical) industries (D'Oliviera, 2013). This necessitated several optimisation strategies to increase productivity and efficiency whilst cutting cost.

Furthermore, employees in the mining industry are exposed to an array of safety and hygiene risks, typical to the underground mining environment. Hygiene risks include poor illumination, extreme temperatures, noise levels above 85dB, dust, physical strain and limited exposure to daylight (Donoghue, 2004; Luthans, 2008; Oldfield & Mostert, 2007). Safety risks include potential rock falls, hazardous and fiery gasses, mobile equipment, as well as the risk of explosions, fire and entrapment (Amponsah-Tawiah, Jain, Leka, Hollis, & Cox, 2013; Donoghue, 2004; Masia & Pienaar, 2011; Oldfield & Mostert, 2007; Pule, 2011). Managers in the mining industry are also then under severe pressure from government and the Department of Mineral Resources to reduce health and safety related injuries (Deloitte, 2013). The addition of other organisational stressors, inherent to the mining industry, such as shift work, long working hours, unionization, red-tape and bureaucratic rules, adds to perceived stress levels of mining employees and managers (Masia & Pienaar, 2011; Oldfield & Mostert, 2007; Strydom & Meyer, 2002).

Mid-level managers may be particularly vulnerable to experience occupational stress as a result of the above-mentioned stressors as well as the particular job demands imposed on them. Mid-level managers are responsible for implementing policies and plans, and have to balance high expectations from senior managers with the demands of subordinates (Strydom & Meyer, 2002; Jacobs, Mostert & Pienaar, 2008). Mid-level managers are, therefore, required to deal with a seemingly overwhelming number of stress inducing demands. Confirming this, supervisors in the Northern Cape mining industry (Jacobs et al., 2008) and mid-level managers in the Western Cape (Strydom & Meyer, 2002) did indeed report on experiencing increased job demands and role overload. If unmanaged, the long-term onslaught of stressors may erode the mid-level manager's ability to respond to the demands, which exposes him to possible adverse health outcomes such as burnout (Donoghue, 2004; Rothmann, 2008; Storm & Rothmann, 2003).

## **Burnout**

The burnout concept originated from Freudenberger (1974) and Maslach's (1976) observations on the gradual depletion of energy, motivation, compassion and performance in employees who work with people. Burnout was initially exclusively linked to the helping professions, and was originally defined as a syndrome of emotional exhaustion, depersonalisation and reduced accomplishment that occur amongst individuals who work with people (Maslach, 1976, 1982).

Over time, research indicated the presence of burnout in job categories beyond human services occupations (Maslach, Jackson, & Leiter, 1996; Maslach & Leiter, 1997; Schaufeli & Enzmann, 1998). The definition of burnout was adapted to apply to non-human services professions and the three subdimensions of burnout were renamed exhaustion, cynicism and professional efficacy (Maslach et al., 1996; Maslach & Leiter, 1997). Exhaustion refers to the individual's perceived reduction in emotional and physical resources to combat the demands. This is accompanied by the experience of cynicism, which entails negative and insensitive attitudes towards work. Reduced professional efficacy occurs due to a decline in the individual's subjective appraisal of his/her competence, and is associated with a lack of achievement and under-productiveness (Maslach, Schaufeli, & Leiter, 2001)

Burnout is attributed to the long-term exposure to chronic stress, where the person's adaptive responses to the environmental stressors gradually erode (Brill, 1984, Levert, Lucas, & Ortlepp, 2000, Maslach, 1982). Storm and Rothmann (2003) referred to burnout as the final stage of breakdown due to a person's inability to mediate stressors.

Antonovsky (1979, 1987), however, noted that even though stressful situations are an integral part of life, some individuals seem to cope remarkably well. He considered the many instances where individuals managed to stay reasonably well, despite stressful circumstances and adversity such as war, concentration camp incarceration, illness and loss. At a time when most of medical, sociology and psychological research was concerned with why people fell ill, Antonovsky started to ask why people managed to stay well. Antonovsky (1987) named his investigation of the origin of health salutogenesis, derived from the Latin word "salus" (health) and the Greek word "genesis"

(origin) (Antonovsky, 1987). The salutogenic paradigm sparked a wealth of health and wellness related research. Several behavioural constructs have been linked to the salutogenic paradigm, including self-actualisation, sense of coherence, hardiness, potency, self-efficacy, learned resourcefulness and internal locus of control (Strümpfer, 1990). Confirming Antonovsky's hypothesis, Rothmann (2004) found that managers with a strong sense of coherence and an internal locus of control are less likely to experience burnout, compared to those who lack these psychological strengths.

### **Sense of coherence**

Sense of coherence is defined as a life orientation, which predisposes the individual to experience life demands as comprehensible, to believe in their ability to manage these demands, and to view the demands as meaningful challenges (Antonovsky, 1984, 1987; Strümpfer, 1990). Antonovsky (1987) and Strümpfer (1990) emphasized that sense of coherence is a dispositional orientation, rather than a once-off coping response to a specific event. Sense of coherence is a life orientation that makes it easier for the individual to make sense of stimuli and exploit the available resources to meet the demands imposed on him. Antonovsky (1987) identified three dimensions that were consistent in individuals with a strong sense of coherence, namely comprehensibility, manageability and meaningfulness.

Comprehensibility is defined as the individuals' ability to view events, circumstances or demands as being predictable, explainable and making cognitive sense. Regardless of the undesirability of the event, the individual with a strong sense of coherence will view it as orderable, structured and consistent. In contrast, an individual with a weak sense of coherence will experience life events as random, chaotic, accidental and inexplicable (Antonovsky, 1984, 1987; Strümpfer, 1990).

Manageability encompasses the individual's belief that he/she has external and internal resources at his/her disposal to adequately meet the demands imposed on him. The individual with a strong sense of coherence has confidence in his/her capacity to meet the demands. Low manageability is associated with feelings of helplessness, victimisation and paranoia (Antonovsky, 1984, 1987; Strümpfer, 1990).

The term meaningfulness represents the individual's ability to make emotional sense of the demands imposed on him/her as well as his/her motivation to invest energy in meeting the demands. When a strong sense of coherence individual is faced with adversity, he/she is motivated to take up the challenge, seek meaning in the event and strive to overcome the adversity (Antonovsky, 1984, 1987; Strümpfer, 1990).

Sense of coherence is positively related to the general well-being of employees (Feldt, 1997) and has a moderating impact on the experience of job-related stress (Feldt, 1997; Rothmann, Jackson, & Kruger, 2003; Van der Colff & Rothmann, 2009). Not surprisingly, sense of coherence was found to have a mitigating impact on the incidence of burnout. The impact of sense of coherence in preventing burnout has been researched extensively in several contexts, and most researchers reported statistically significant negative relationships between sense of coherence and exhaustion, cynicism and reduced professional efficacy (Harry & Coetzee, 2011; Gilbar, 1998; Levert et al., 2000; Rothmann et al., 2003; Rothmann, 2004; Rothmann, Malan, & Rothmann, 2001; Van der Colff & Rothmann, 2009; Van Jaarsveld, 2004; Viljoen, 2013).

Thus, individuals with a strong sense of coherence are likely to view stressors as comprehensible, manageable and having meaning. This enables them to cope successfully with occupational stress, which in turn prevents the experience of exhaustion, cynicism and reduced professional efficacy, associated with burnout.

### **Work locus of control**

The locus of control concept originated from Rotter's (1966) quest to understand why individuals fail to respond in a predictable manner to reinforcement and reward. Rotter (1966) postulated that individuals will adapt their behavioural responses based on their expectation of reinforcement and distinguished between individuals with internal and external locus of control (Rotter, 1966, 1992).

Internal locus of control can be described as a person's believe that reinforcement or outcomes are determined by his/her own behaviour, choices and personal attributes. Externals, however, believe that outcomes are random and unpredictable and occur due to chance, luck, fate or significant others (Rotter, 1966, 1992; Schepers, 2005, Spector,

1988).

Work locus of control emerged from an interactionist view on the causes of behaviour, where behaviour is believed to be caused by the interaction between the individual's dispositional traits with the environment (Endler, 1976; Maram & Miller, 1998; Rotter, 1966). Based on the interactionist view, Spector (1988) postulated that locus of control can be domain specific, meaning that an individual could have an internal locus of control in one area of his/her life, and an external locus of control in another. Spector (1988) developed the Work Locus of Control Scale (WLCS) as a domain specific assessment of locus of control in organisational settings.

Research by Kinicki and Vecchio (1994), Maram and Miller (1998) and Spector (1988) indicated higher correlations between work locus of control and organisational outcomes, compared to correlations between generalized locus of control scales and organisational outcomes. Maram and Miller (1988) concluded that the work locus of control scale may be a more accurate predictor of work behaviour than general locus of control scales.

Daniels and Guppy (1994) established that employees with an external locus of control reported higher levels of occupational stress. Schepers, Gropp, and Geldenhuys (2006) found that internal locus of control is positively associated with psychological wellness and negatively associated with stress management. The relationship between external locus of control and occupational stress may cause externals to be more susceptible to burnout.

Research confirmed the positive correlation between external locus of control and exhaustion, cynicism and reduced professional efficacy (Akça & Yaman, 2010; Glass & McKnight, 1996; Rothmann, 2004; Rothmann & Malan, 2003; Schepers et al., 2006).

Individuals with an external locus of control believe that they have little control over stressful situations and demands, which makes them less inclined to employ strategies to overcome stressors. As a result, employees with an external locus of control are more likely to experience burnout. Conversely, individuals with an internal locus of control will believe in their ability to overcome adversity, making them less susceptible to

burnout.

### **Problem statement**

Burnout has a detrimental impact on the wellness of individuals and symptoms include physical, emotional and psychological exhaustion, psychosomatic disorders, depression and anxiety and feelings of helplessness and hopelessness, to name but a few (Cilliers, 2002; Golembiewski, Munzenrider, & Stevenson, 1986; Maslach, 1982; Maslach & Jackson, 1981; Pines, Aronson & Kafry, 1981; Schaufeli & Enzmann, 1998). Apart from the harmful effect of burnout on the individual, it also holds severe negative implications for the organisation. Burned out employees are likely to display dysfunctional attitudes and behaviours at work, including poor work performance, impaired decision making, reduced ability to deal with complexity, procrastination, tardiness, accident proneness due to increased risk-taking, aggression and inappropriate resistance to change (Cilliers, 2002; Levert et al., 2000; Maslach, 1982; Maslach & Jackson, 1981; Schaufeli & Enzmann, 1998; Storm & Rothmann, 2003). Burnout may lead to reduced productivity and efficiency, poor service delivery as well as an increase in absenteeism and turnover (Maslach & Jackson, 1986; Schaufeli & Enzmann, 1998; Storm & Rothmann, 2003). These undesirable outcomes may significantly impair organisations' ability to remain competitive.

From the literature review, overwhelming support was found for the mitigating impact of sense of coherence on burnout (Harry & Coetzee, 2011; Gilbar, 1998; Levert et al., 2000; Rothmann et al., 2003; Rothmann, 2004; Rothmann et al., 2001; Van der Colff & Rothmann, 2009; Van Jaarsveld, 2004; Viljoen, 2013). Significantly fewer studies have been conducted on the relationship between locus of control and burnout, although most are in support of the mitigating impact of internal locus of control on burnout (Akça & Yaman, 2010; Glass & McKnight, 1996; Rothmann, 2004; Rothmann & Malan, 2003; Schepers et al., 2006).

There is, however, limited research on the impact of sense of coherence and work locus of control on burnout within the coal mining industry. No research could be found on the relationship between the constructs amongst mid-level managers in the coal mining industry, specifically. Considering the important role of mid-level managers in ensuring

the operational success of coal mining organisations, as well as the vast number of stress inducing demands they are exposed to, research on the wellness of this specific target group is paramount for the survival of the coal mining industry. This research, therefore, endeavours to add to the current knowledge base, in determining the way in which the constructs of sense of coherence, work locus of control and burnout manifest and interrelate in mid-level managers in underground coal mining operations. The general aim of this research is, therefore, to investigate the relationships between sense of coherence, work locus of control and burnout amongst mid-level managers in underground coal mining operations in Mpumalanga. The research also intends to determine if the salutogenic constructs, sense of coherence and work locus of control, can be used to predict the level of burnout amongst the target population.

By understanding the incidence of burnout and the salutogenic characteristics that may mitigate its occurrence, one can attempt to provide mid-level managers with the necessary skills and support to improve their general well-being. This in turn, may prove invaluable to the coal mining's ability to remain competitive given the increasing demands imposed upon it.

Taking the above into account, the following hypotheses were formulated:

Hypothesis 1: There is a statistically significant negative relationship between sense of coherence and burnout in the sample group of mid-level managers in underground coal mining operations in Mpumalanga.

Hypothesis 2: There is a statistically significant negative relationship between work locus of control and burnout in the sample group of mid-level managers in underground coal mining operations in Mpumalanga.

Hypothesis 3: Sense of coherence and work locus of control can statistically significantly predict the level of burnout of mid-level managers in underground coal mining operations in Mpumalanga.

## **RESEARCH DESIGN**

### **Research approach**

The research was quantitative and descriptive in nature. A cross-sectional survey design, in which all data is collected at a single point in time, was used to achieve the objectives of this research (Spector, 2003).

### **Research method**

#### ***Research participants***

The population group included mid-level managers in a leading coal mining organisation, situated in Mpumalanga, South Africa. The mid-level managers are distributed over five mining operations, which collectively consist of 52 underground production sections. The mining practices, rules and regulations, and reporting structures are consistent in all 52 underground production sections. Employees between job levels 4 and 8, with one or more subordinates, from production, maintenance and selected services areas were targeted.

The following job categories were targeted: job categories in production and maintenance included Miners and Artisans (as first line supervisors), Shift Bosses, Foremen, Mine Overseers, Chief Foremen, Underground Managers, Mine Captains, Section Engineers and Shaft Managers. Support functions such as Safety, Health and Environment, Surveyance and Geology and Planning and Logistics were included in the population group due to the similarity in work circumstances (shift work, regular underground visits, etc.). Employees from the transactional and central services departments, such as Human Resources, Finance, Information Technology, Communication and other administrative services were excluded from the study.

The total population of mid-level managers is approximately 587 employees and all employees in the target population were targeted. The sampling strategy can thus be described as convenience sampling. A sample of 165 respondents completed the questionnaires, of which 131 questionnaires were usable.

A biographical questionnaire was administered to obtain personal information about the participants. The characteristics of the participants are summarised in Table 1.

**TABLE 1**  
*Characteristics of participants in the sample*

<b>Item</b>	<b>Category</b>	<b>Percentage</b>	<b>Frequency</b>
<b>Gender</b>	Male	91.6	120
	Female	8.4	11
<b>Age</b>	18–25	2.3	3
	26–30	12.2	16
	31–35	15.3	20
	36–40	19.1	25
	41–45	15.3	20
	46–50	10.7	14
	51–55	13.7	18
	56–60	7.6	10
	61+	3.8	5
<b>Race</b>	African	32.8	43
	White	59.5	78
	Indian	4.6	6
	Coloured	3.1	4
<b>Marital Status</b>	Single	9.9	13
	Married	74.8	98
	Divorced	9.2	12
	Life Partner	4.6	6
	Widowed	1.5	2
<b>Qualification</b>	Grade 11 and lower	1.5	2
	Grade 11 and lower with trade certificate	3.1	4
	Grade 12	13.7	18
	Grade 12 with trade certificate	35.1	46
	Diploma	27.5	36
	Graduate	11.5	15
	Honours degree	3.8	5
	MBA	1.5	2
	Master's Degree	0.8	1
Not specified	1.5	2	
<b>Years in Position</b>	Less than 1 year	8.4	11
	1–2 years	12.2	16
	3–5 years	23.7	31
	6–10 years	19.1	25
	11–15 years	11.5	15
	16–20 years	9.2	12
	More than 20 years	16.0	21

*(Continues on next page)*

**TABLE 1 (Continued)**

<b>Item</b>	<b>Category</b>	<b>Percentage</b>	<b>Frequency</b>
<b>Job Level</b>	Level 4	5.3	7
	Level 5a	6.1	8
	Level 5b	8.4	11
	Level 6	16.8	22
	Level 6a	8.4	11
	Level 7	37.4	49
	Level 8	17.6	23
<b>Work Area</b>	Production	35.1	46
	Maintenance	36.6	48
	Support	28.2	37
<b>Job Title Category</b>	Miner	0	0
	Shiftboss	12.2	16
	Mine Overseer	9.9	13
	Mine Captain	0.8	1
	Artisan	16.8	22
	Foremen	13.0	17
	Chief Foremen	4.6	6
	Engineering	5.3	7
	Planning and Optimising	14.5	19
	Safety, Health and Environment	13.7	18
	Surveyance and Geology	4.6	6
	Shaft Manager	4.6	6
<b>Managing Others</b>	Yes	88.5	116
	No	11.5	15
<b>Number of reportees</b>	0	11.5	15
	1–5	37.4	49
	6–10	37.4	49
	11–20	13.7	18
<b>How often underground</b>	Never	13.7	18
	A few times a year	3.8	5
	A few times a month	13.7	18
	A few times a week	39.7	52
	Daily	29.0	38
<b>Self-reported stress levels</b>	Very little stress	7.6	10
	Occasional stress (manageable)	22.1	29
	Occasional stress (severe)	29.8	39
	Somewhat stressful	6.9	9
	Stressful	19.1	25
	Extremely stressful	14.5	19

The sample group included mostly male participants (91.6%), which is consistent with the predominant male population in the mining industry. They were mostly married (74.8%) and between the ages of 31 to 45 years.

The racial distribution included white (59.5%), black (32.8%), Indian (4.6%), as well as coloured employees (3.1%). The sample group's qualifications predominantly included Grade 12 with trade certificates (35.1%) and diplomas (27.5%). The majority of participants (88.5%) were managers of others with one or more employees reporting to them, as was the criteria for target population selection. However, the 11.6% of respondents with no direct reports were managers of functions and were, therefore, included in the population.

### ***Measuring instruments***

#### *Orientation to Life Questionnaire (OLQ) (Antonovsky, 1987)*

The Orientation to Life Questionnaire (OLQ) (Antonovsky, 1987) measures sense of coherence as a total score, which is comprised of three dimensions, namely comprehensibility, manageability and meaningfulness. The instrument measures all three dimensions, with scores in each of the dimensions being seen as supportive of the total score. The questionnaire is a self-completion questionnaire, made up of 29 questions which the respondent has to answer. The items are set up using a seven-point Likert scale. Thirteen of the items (1, 4, 5, 6, 7, 11, 13, 14, 16, 20, 23, 25, and 27) are formulated in the negative and, therefore, have to be reverse scored. The items comprise 11 questions measuring comprehensibility, ten measuring manageability and eight measuring meaningfulness (Antonovsky, 1987). In a South African study to determine the reliability, Strümpfer and Wissing (1998) reported Cronbach Alphas ranging from 0.74 to 0.94. The Orientation to Life Questionnaire also shows high test-retest reliability (Cilliers & Kossuth, 2004). Strümpfer and Wissing (1998) established the validity of the questionnaire in a range of South African studies. The instrument is well accepted in the field of psychology as a valid and reliable instrument for measuring sense of coherence (Antonovsky, 1993; Cilliers & Coetzee, 2003).

#### *Work Locus of Control Scale (WLCS) (Spector, 1988).*

The Work Locus of Control Questionnaire (WLCS) is a domain-specific instrument to measure locus of control in organisational settings (Spector, 1988). The instrument was introduced and validated by Spector (1988). The paper-based, self-completion questionnaire consists of 16 questions. Each item is judged on a seven-point Likert scale,

which ranges from one (1) denoting “disagree very much” to six (6) denoting “agree very much”. The total score is calculated, with high scores (maximum 96) indicating external locus of control, and low scores (minimum 16) indicating internal locus of control. Eight questions (question 1, 2, 3, 4, 7, 11, 14 and 15) are worded towards internality and should, therefore, be reverse scored. The average tendency towards internality (low score) or externality (high score) is calculated. Reliability of the instrument measured at acceptable levels, with Cronbach alphas ranging between 0.75 and 0.85 (Spector, 1988). South African studies confirmed the scale’s high reliability and found alpha coefficients of 0.70 (Rothmann & Van Rensburg, 2001) and 0.85 (De Jager, 2006). Evidence of construct validity was established by Spector (1988) and confirmed by Maram and Miller (1998). The Work Locus of Control Scale shows high correlation (0.75) with Rotter’s Locus of Control Scale (Spector, 1988) and is the only available scale that measures locus of control in an organisational setting. It complies with the theoretical concept of domain specific locus of control and was, therefore, selected as a suitable instrument for the study.

*Maslach Burnout Indicator – General Survey (MBI-GS) (Maslach et al., 1996)*

The MBI-GS measure the incidence of burnout and can be applied to populations beyond the human services occupations (Maslach & Leiter, 1997). The MBI-GS contains three subscales that assess the different aspects of experienced burnout, namely exhaustion, cynicism and lack of professional efficacy. The MBI is a self-administered questionnaire. The respondent is asked to answer 16 statements regarding their job-related feelings on a scale of 0 to 6, where 0 represents never having this feeling about one’s job and 6 represents having this feeling every day. Maslach et al. (1996) reported high internal consistencies (reliability) with Cronbach alpha coefficients ranging between 0.87 to 0.89 for exhaustion; 0.73 to 0.74 for cynicism, and 0.76 to 0.84 for professional efficacy. Data on test-retest reliabilities after a period of one year were 0.65 for exhaustion, 0.60 for cynicism and 0.67 for professional efficacy. In recent studies, Van Jaarsveld (2004) and Viljoen (2013) found high internal consistency (reliability) in all three subscales, with Cronbach alphas ranging between 0.85 and 0.91. Maslach et al. (1996) found evidence to support the construct validity of the MBI-GS.

### ***Research procedure***

The research proposal was presented to the organisation's Psychologists' Forum and preliminary permission was obtained to complete the research. Further permission was obtained from the Human Resources General Manager as well as the general managers of the five mining organisations. An electronic link to a web-based survey document was distributed via e-mail, as well as an information sheet and an informed consent document. The consent form provided a brief introduction to the intent and background of the survey. Employees were reassured of the anonymity of the questionnaires, as well as the voluntary nature of the research. Participants were informed that the research results of the entire group may be shared with the management of the organisation, but that no individuals would be identified. The survey duration and the survey procedure were discussed and the necessary permission documents were included.

Since mid-level managers in underground coal mining, spend most of their time underground, some of the individuals were targeted during communication and/or shaft meetings on surface. In these instances, participants completed a paper-based questionnaire. As with the electronic questionnaires, no time limit was set for the completion of the paper-based questionnaires.

### ***Statistical analysis***

The statistical analysis was carried out with the SPSS program (SPSS Inc., 2011). Cronbach alpha coefficients were used to assess the reliability of the measuring instruments. Descriptive statistics (means, standard deviations, skewness and kurtosis) were used to determine the distribution of the data and the degrees to which the variables existed in the sample.

Pearson's correlation coefficient was used to determine the correlations between the variables and the statistical significance was set at a 95% confidence interval level ( $p \leq 0.05$ ). Cut-off points of 0.30 for medium effect and 0.50 for large effect were set for the practical significance of correlation coefficients (Cohen, 1988).

Multiple regression analysis was conducted to determine the degree to which sense of coherence and work locus of control can predict the levels of burnout of mid-level managers in the sample group.

The subdimensions of sense of coherence (comprehensibility, manageability and meaningfulness) correlate very high with the sense of coherence total. In order to eliminate the possibility of multicollinearity, only the sense of coherence total was included in the regression model. Multicollinearity is a statistical phenomenon in which two or more predictor variables in a multiple regression model are highly correlated, and is a common phenomenon in many multifaceted personality scales (Hittner, 2000). In some instances, the high correlation among subdimensions can cause questionable results when evaluating their relative importance. Such questionable results may include dubious beta weights or bivariate correlations as well as inflated standard errors. This causes the regression model to become unreliable as it becomes difficult to tell which predictive variable (sub dimension) causes the variation on the dependant variable (Hittner, 2000).

The use of the sense of coherence total score is also theoretically sound. Antonovsky stated that even though the three components of sense of coherence can be distinguished theoretically, their relations are “inextricably intertwined” (Antonovsky, 1987, p86). Antonovsky (1987; 1993) did not recommend the study of subdimension interrelations due to the high inter correlations, and suggested that the sense of coherence total score be used instead.

## **RESULTS**

The descriptive statistics and alpha coefficients of the selected measuring instruments for the target group are reported in Table 2.

From the results in Table 2, it can be seen that all of the Cronbach alpha coefficients of the subscales were considered acceptable compared to the guideline of  $\alpha > 0.70$  (Nunally & Bernstein, 1994).

**TABLE 2*****Descriptive statistics and alpha coefficients of the measuring instruments***

<b>Item</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Skewness</b>	<b>Kurtosis</b>	<b><math>\alpha</math></b>
<b>Sense of coherence</b>						
Comprehensibility	130	49.34	10.59	0.13	-0.63	0.80
Manageability	130	49.84	9.64	-0.48	-0.10	0.80
Meaningfulness	131	43.35	7.35	-0.49	-0.22	0.74
SOC total	130	142.62	24.02	-0.11	-0.42	0.90
<b>Work Locus of Control</b>						
WLOC	126	44.34	12.20	0.14	-0.62	0.84
<b>MBI (Burnout)</b>						
Exhaustion	129	11.78	7.82	0.53	-0.71	0.91
Professional Efficacy	130	30.83	4.79	-1.16	0.99	0.70
Cynicism	131	9.93	6.70	0.51	-0.24	0.75

The incidence in which the constructs exists within the sample group can be summarized as follows:

*Sense of coherence*

As reported in Table 2, the mean score of the SOC total is 142.62 with a standard deviation of 24.02. A high score (maximum 203) indicates a strong sense of coherence, whilst a low score (29) is indicative of a weak sense of coherence. The sample is considered to have a strong sense of coherence. The SOC total mean score is slightly above a South African norm of 137 as established by Strümpfer and Wissing (1998). Van Jaarsveld (2004) and Viljoen (2013) found mean scores of 140.48 and 138.34 respectively for engineers and scientists. Gropp, Geldenhuys, and Visser (2007) measured a mean score on the SOC total of 140.67 for a non-managerial group, compared to a mean score of 151 for a managerial group. Rothmann (2004) found a SOC total mean score of 154.69 for senior managers in a manufacturing organisation. Considering that the sample consists of mid-level managers, it is important to note that, even though their SOC total score is relatively high, it is lower than the mean scores of other management samples.

### *Work locus of control*

The mean score for work locus of control for the sample group is 44.34 with a standard deviation of 12.20. Low scores (minimum 16) indicate a tendency towards internality, whilst high scores (maximum 96) indicate external locus of control. Spector (1988) reported a mean work locus of control score of 42.48, whilst De Jager (2006) found an average score of 41.50. Spector (2006) reported a South African norm of 37.7 for the work locus of control scale. The mean score of the target group is slightly above the South African norm and findings from other research. Although a slight inclination towards externality is noted, the mean work locus of control score for the target group is considered to be average (i.e. neither internal nor external).

### *Burnout*

The level of burnout in the sample group is determined by the guidelines from the Maslach Burnout Inventory (Maslach & Jackson, 1986). For exhaustion mean scores of 12 and lower are considered “low”, mean scores ranging between 13 and 18 are considered “modest” and scores of 19 and above are considered “high”. The sample had a mean score for exhaustion of 11.78 with a standard deviation of 7.82, which indicates a low incidence of exhaustion within the sample group. For cynicism, mean scores of 6 and lower are considered “low”, mean scores ranging between 7 and 10 are “modest” and scores of 11 and above are considered “high”. The sample group has an average incidence of cynicism with a mean score of 9.93 with a 6.70 standard deviation. With regards to professional efficacy, low scores in personal accomplishment imply high burnout levels. Mean scores of 27 and below are considered “high”, scores between 28 and 30 are “modest” and scores of 31 and above indicate “low” levels of burnout. The sample group had a mean score for professional efficacy of 30.83 with a standard deviation of 4.79, which indicate average levels of burnout. Based on Table 2, the sample of mid-level managers in coal mining operations are considered to experience low incidence of exhaustion, and modest or average levels of cynicism and reduced efficacy.

The Pearson correlations for the different scales are reported in Table 3.

**TABLE 3*****Relationship between sense of coherence, work locus of control and burnout***

		Comprehensibility	Manageability	Meaningfulness	Sense of Coherence Total	Work Locus of Control	Exhaustion	Professional Efficacy	Cynicism
Comprehensibility	Pearson Sig. (2-tailed)	-							
Manageability	Pearson Sig. (2-tailed)	0.70**	-						
Meaningfulness	Pearson Sig. (2-tailed)	0.51**	0.69**	-					
Sense of Coherence Total	Pearson Sig. (2-tailed)	0.88**	0.92**	0.80**	-				
Work locus of control	Pearson Sig. (2-tailed)	-0.36**	-0.48**	-0.49**	-0.50**	-			
Exhaustion	Pearson Sig. (2-tailed)	-0.38**	-0.46**	-0.56***	-0.51***	0.43**	-		
Professional Efficacy	Pearson Sig. (2-tailed)	0.37**	0.40**	0.47**	0.47**	-0.34**	-0.33**	-	
Cynicism	Pearson Sig. (2-tailed)	-0.45**	-0.59***	-0.61***	-0.62***	0.47**	0.55**	-0.39**	-

\* Correlation is significant at the 0.05 level (2-tailed).

+ Correlation is of practical significance, medium effect ( $r > 0.3$ )

++ Correlation is of practical significance, large effect ( $r > 0.5$ )

From Table 3 it can be seen that exhaustion is negatively related to sense of coherence (practical significance of large effect), and positively related to external work locus of control (practical significance of medium effect). Professional efficacy is positively related to sense of coherence (practical significance of medium effect) and negatively related to external work locus of control (practical significance of medium effect). Cynicism is strongly negatively related to sense of coherence (practical significance of large effect), and positively related to external work locus of control (practical significance of medium effect).

Multiple regression analysis was conducted to assess whether or not sense of coherence and work locus of control can predict burnout.

Table 4 shows the results of the multiple regression analysis with exhaustion as dependent variable and sense of coherence and work locus of control as the independent variables.

**TABLE 4**

*Multiple regression analysis with exhaustion as dependent variable and sense of coherence and work locus of control as independent variables*

	UNSTANDARDISED COEFFICIENTS		STANDARDISED COEFFICIENTS	<i>T</i>	<i>P</i>	<i>F</i>	<i>R</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$
	<b>B</b>	<b>SE</b>	<b>BETA</b>						
(Constant)	25.844	5.697	-	4.537	0.000	28.944	0.567	0.322	0.311
SOC Total	-0.141	0.028	-0.429	-4.994	0.000*				
WLOC	0.137	0.055	0.214	2.490	0.014*				

\* $p < 0.05$

The results in Table 4 demonstrate that sense of coherence and work locus of control predicted 32.2% of the variance in exhaustion ( $F = 28.944$ ,  $p < 0.05$ ,  $\Delta R^2 = 0.311$ ).

Table 5 shows the results of multiple regression analysis with professional efficacy as the dependent variable and sense of coherence and work locus of control as independent variables.

**TABLE 5**

*Multiple regression analysis with professional efficacy as dependent variable and sense of coherence and work locus of control as independent variables*

	UNSTANDARDISED COEFFICIENTS		STANDARDISED COEFFICIENTS	<i>T</i>	<i>P</i>	<i>F</i>	<i>R</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$
	<b>B</b>	<b>SE</b>	<b>BETA</b>						
(Constant)	23.052	3.690	-	6.247	0.000	31.308	0.452	0.204	0.198
SOC Total	0.074	0.018	0.374	4.044	0.000				
WLOC	-0.060	0.036	-0.157	-1.694	0.093				

\* $p < 0.05$

The results in Table 5 demonstrate that sense of coherence as the only statistically significant predictor, predicted 20.4% of the variance in professional efficacy ( $F = 31.308$ ,  $p < 0.05$ ,  $\Delta R^2 = 0.198$ ).

Table 6 shows the results of the multiple regression analysis with cynicism as the dependent variable and sense of coherence and work locus of control as the independent variables.

**TABLE 6**

*Multiple regression analysis with cynicism as dependent variable and sense of coherence and work locus of control as independent variables*

	UNSTANDARDISED COEFFICIENTS		STANDARDISED COEFFICIENTS	<i>T</i>	<i>P</i>	<i>F</i>	<i>R</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$
	<b>B</b>	<b>SE</b>	<b>BETA</b>						
(Constant)	24.340	4.573	-	5.323	0.000	41.654	0.637	0.406	0.396
SOC Total	-0.140	0.023	-0.497	-6.173	0.000*				
WLOC	0.122	0.044	0.222	2.756	0.007*				

\* $p < 0.05$

The results in Table 6 demonstrate that sense of coherence and work locus of control predicted 40.6% of the variance in cynicism ( $F = 41.654$ ,  $p < 0.05$ ,  $\Delta R^2 = 0.396$ ).

## DISCUSSION

The general aim of the study was to investigate the relationship between sense of coherence, work locus of control and burnout amongst mid-level managers in underground coal mining operations in Mpumalanga, and to determine whether sense of coherence and work locus of control can be used to predict the level of burnout of these managers.

The reliability of the instruments was considered acceptable compared to the guideline of  $\alpha > 0.70$  (Nunnally & Bernstein, 1994). The Orientation to Life Questionnaire (Antonovsky, 1987) showed an internal consistency of 0.90 for the sense of coherence total score, with its subdimensions measuring at 0.80, 0.80 and 0.74 for comprehensibility, manageability and meaningfulness respectively. This is consistent with findings from Strümpfer and Wissing (1998) who reported Cronbach alphas ranging between 0.74 and 0.94. The alpha coefficient for work locus of control, as measured by Spector's (1988) Work Locus of Control Scale, is established at 0.84, confirming the high reliabilities of 0.70 and 0.85, found by Rothmann and Van Rensburg (2001) and De Jager (2006) respectively. Burnout's reliability was indicated at 0.91 for exhaustion, 0.70 for professional efficacy and 0.75 for cynicism. The high reliability of the MBI-GS instrument is consistent with the findings of Maslach et al. (1996) and Viljoen (2013). Viljoen (2013) found high reliabilities of 0.91 for exhaustion, 0.85 for professional efficacy and 0.85 for cynicism respectively.

The sample group of mid-level managers in underground coal mining operations displayed mean scores indicative of a strong sense of coherence. They are thus able to view demands from the environment as orderable and structured. They are also likely to believe that they have command over external and internal resources to overcome the stressors and are likely to find meaning in rising to the challenges (Antonovsky, 1984, 1987; Strümpfer, 1990).

The mean score for work locus of control is considered moderate, although leaning slightly towards externality. The moderate score implicates that the group neither display

a strong tendency to view life events as outcomes of their own behaviour and/or decisions, nor a strong tendency to view outcomes as beyond their personal control. A slight inclination towards externality, may indicate that they are marginally more likely to attribute outcomes to external forces compared to other South African norms (De Jager, 2006; Spector, 2006).

The sample reported to experience low to moderate levels of burnout, with mean scores indicating low incidence of exhaustion, and average levels of cynicism and reduced professional efficacy. It seems that the group may possess adequate emotional and physical resources to combat fatigue. They are, however, moderately inclined to harbour negative attitudes towards work, as well as to perceive lower subjective professional competence (Maslach et al., 2001).

The research investigated the relationships between the salutogenic constructs, sense of coherence, work locus of control and burnout. Only the sense of coherence total score was used, to control for multicollinearity (Hittner, 2000). The results displayed statistically significant relationships between all constructs with a confidence interval level of 95%. All the interrelationships between the constructs displayed practical significance with either medium (0.30) or large effect (0.50) (Cohen, 1988).

The results indicated that sense of coherence is inversely related to exhaustion and cynicism, and positively related to professional efficacy. The relationship implies that a mid-level manager with a strong sense of coherence is less likely to experience exhaustion, cynicism and reduced professional efficacy associated with burnout. The individual with a strong sense of coherence is able to view events as comprehensible, manageable and having meaning, enabling him/her to deal effectively with stress and subsequently prevent burnout (Rothmann et al. 2003; Van der Colff & Rothmann, 2009). The negative relation between sense of coherence and burnout confirms the findings of several researchers, including Harry and Coetzee (2011), Gilbar (1998), Levert et al. (2000), Rothmann et al. (2003), Rothmann (2004), Rothmann et al. (2001), Van der Colff and Rothmann (2009), Van Jaarsveld (2004) and Viljoen (2013).

Hypothesis 1 set out to prove that there is a statistically significant negative relationship

between sense of coherence and burnout in the sample group of mid-level managers in underground coal mining operations in Mpumalanga, and is accepted.

External work locus of control was found to be positively related to exhaustion and cynicism but negatively related to professional efficacy. This means that a mid-level manager who believe that life outcomes are the result of luck, fate or significant others, are less likely to take control of stressful situations (Daniels & Guppy, 1994; Schepers et al., 2006). Previous research indicated that external locus of control is implicated in the development of burnout and several other studies found significant correlations between external locus of control and exhaustion, cynicism and reduced professional efficacy associated with burnout (Akça & Yaman, 2010; Glass & McKnight, 1996; Rothmann, 2004; Rothmann & Malan, 2003; Schepers et al., 2006). Conversely, mid-level managers with an internal locus of control might be able to find the resources within themselves to overcome difficulty, and will, therefore, be less prone to burnout.

Hypothesis 2 can thus be accepted in that a statistically significant negative relationship was found between work locus of control and burnout in the sample group.

Hypothesis 3 set out to investigate whether sense of coherence and work locus of control can statistically significantly predict the level of burnout in the sample group.

Multiple regression analysis resulted in the following prediction results: sense of coherence and work locus of control predicted 32.3% of the variance in exhaustion and 40.6% of the variance in cynicism. In the case of professional efficacy, only sense of coherence proved to be a significant predictor, with work locus of control not making a statistically significant contribution. Sense of coherence predicted 20.4% of the variance in professional efficacy.

Thus, a person with a weak sense of coherence and external locus of control will be more likely to experience burnout. A tendency to view life demands as disorderly, random, unmanageable and meaningless, coupled by a belief that outcomes are outside one's realm of control, strongly predicts the incidence of exhaustion and cynicism. The findings on the predictive nature of sense of coherence on burnout, confirms research by

Van der Colff and Rothmann (2009) and Viljoen (2013). Rothmann (2004) found that sense of coherence and work locus of control, combined with self-efficacy and coping strategies, predicted exhaustion and cynicism. In this research, only sense of coherence predicted professional efficacy. This is similar to findings from other researchers (Van der Colff & Rothmann, 2009; Viljoen, 2013). Whilst this may be due to the fact that sense of coherence and work locus of control are highly correlated, Van der Colff and Rothmann (2009) considered it as a confirmation that professional efficacy is a personality characteristic, rather than an outcome of burnout, as was argued by some researchers (Cordes & Dougherty, 1993; Schaufeli, 2003)

From the above results, it can be derived that the independent salutogenic variables, sense of coherence and work locus of control, predicted a large portion of the incidence of burnout in the sample group and hypothesis 3 can subsequently be accepted.

The practical implication of the above findings is as follows: A person's inability to take control and deal with the constant onslaught of stressors, coupled with an inability to see the significance of dealing with these stressors, may predict their inclination to become exhausted and cynical. Conversely, the strong sense of coherence individual understands that stressful demands are part of life, and will find the resources and motivation to overcome it. A strong sense of coherence, as predictor of professional efficacy, may be due to a positive cycle of reinforcement. If the individual consistently finds the means and motivation to overcome stressful situations, it positively impacts their assessment of their professional ability, which in turn provides the individual with the belief that they can overcome these demands. Also, an individual who believes that outcomes are within their personal control, is likely to understand the cause and effect of outcomes, and can alter their decisions and actions to minimize future stressful situations. This may subsequently reduce their propensity to become burned out, confirming the predictive nature of work locus of control in the incidence of burnout.

The empirical limitations of the study include the small availability sample that was used, which makes it difficult to generalise the findings to other mid-level managers in underground coal mining operations. The cross-sectional research design does not provide an indication of causality between the variables. Some method variance, in the

form of exclusive use of self-report measures as well as differences in the sampling strategy (electronic vs. paper based), could impact the common variance of the constructs.

In the absence of norms from mid-level managers in the mining industry, the target group's sense of coherence and work locus of control mean scores was compared to generalised South African norms. The South African norm base for work locus of control, as listed by Spector (2006), is based on a relatively small sample. The level of Burnout in the sample group was measured against international norms.

In the administration and interpretation of the MBI-GS, item 13 was not omitted, as is suggested by Schutte, Toppinen, Kalimo, and Schaufeli (2000) and Storm and Rothmann (2003). This could have had an impact on the empirical results for the sample group.

Recommendations for employers include influencing the development of strong sense of coherence and an internal work locus of control. Comprehensibility can be supported by allowing employees to understand their role in the greater organisation, as well as by designing work and information flow to be structured, ordered, consistent and consequential (Rothmann et al., 2003). Manageability is optimal when job demands and resources are balanced, i.e. when employees have sufficient knowledge, skills, materials, support, feedback and autonomy to meet the demands imposed on them (Antonovsky, 1987). The balance of job demands and resources are implicated in the prevention of burnout by several researchers (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Rothmann et al., 2003; Schaufeli & Enzmann, 1998). A sense of meaning can be created by allowing employees to participate in decision-making and strategy development as well as by providing independence, freedom and autonomy (Rothmann et al. 2003). Meaning could also be enhanced by assisting employees to understand their contribution to organisational success or even societal success.

Organisations can assist with the development of an internal work locus of control by encouraging accountability (Labuschagne, Bosman, & Buitendach, 2005), as well as by reinforcing a direct cause and consequence relation between behaviour and outcomes.

Future research on the relationship between sense of coherence, work locus of control and burnout amongst mid-level managers in underground coal mining operations is encouraged and should include larger sample sizes as well as longitudinal studies. Measuring the levels of occupational stress, as well as the impact of other salutogenic constructs, could provide more insight into the sample group's ability to stay well, manage stress and prevent burnout.

## REFERENCES

Akça, F., & Yaman, B. (2010). The effects of internal-external locus of control variables on burnout levels of teachers. *Procedia Social and Behavioural Sciences*, 2(2010), 3976-3980.

Amponsah-Tawiah, K., Jain, A., Leka, S., Hollis, D., & Cox, T. (2013). Examining psychosocial and physical hazards in the Ghanaian mining industry and their implications for employees' safety experience. *Journal of Safety Research*, 45, 75-84.

Antonovsky, A. (1979). *Health, stress and coping*. San Francisco, CA: Jossey-Bass.

Antonovsky, A. (1984). The sense of coherence as a determinant of health. In J. D. Matarazzo, S. M. Weiss, J. A. Herd, M. E. Miller & S. M. Weiss (Eds.), *Behavioral health: A handbook of health enhancement and disease prevention* (pp. 114-129). New York, NY: Wiley-Interscience.

Antonovsky, A. (1987). *Unravelling the mystery of health: How people manage stress and stay well*. San Francisco, CA: Jossey-Bass.

Antonovsky, A. (1993). The structure and properties of the sense of coherence scale. *Social Science and Medicine*, 36(6), 725-733.

Brill, P. L. (1984). The need for an operational definition of burnout. *Family and Community Health*, 6, 143-150.

Campbell, K. (2002). The four challenges facing SA mine managers. *Mining Weekly*, Retrieved 11 April, 2014, from <http://www.miningweekly.com>

Cilliers, F. (2002). Salutogenic coping with burnout among nurses: a qualitative study. *South African Journal of Labour Relations*, 26(4), 61-85.

Cilliers, F., & Coetzee, S. C. (2003). The theoretical-empirical fit between three psychological wellness constructs: Sense of coherence, learned resourcefulness, and self-actualisation. *South African Journal of Labour Relations*, 27(1), 4-24.

Cilliers, F., & Kossuth, S. P. (2004). The reliability and factor structure of three measures of salutogenic functioning. *South African Journal of Labour Relations*, 28(2), 59-76.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2<sup>nd</sup> ed.). New Jersey: Lawrence Erlbaum Associates.

Cordes, C., & Dougherty, T. W. (1993). A review and an integration of research on job burnout. *Academy of Management Review*, 18, 621-656.

Daniels, K., & Guppy, A. (1994). Occupational stress, social support, job control and psychological well being. *Human Relations*, 47, 1523-1544.

De Jager, M. (2006). *The relationship between Work Locus of Control and Social Wellbeing*. (Unpublished Master's dissertation). University of South-Africa, Pretoria.

Deloitte. (2013). *Tough choices facing the South African mining industry*. Retrieved 10 April, 2014, from <http://www.deloitteblog.co.za/2013/08/15>

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W.B. (2001). The Job Demands-Resources model of burnout. *Journal of Applied Psychology*, 86, 499-512.

D'Oliviera, D. (2013). Demand for Southern African coal set to increase. *Mining Weekly*, Retrieved 30 May, 2014, from <http://www.miningweekly.com>

Donoghue, A. M. (2004). Occupational health hazards in mining: an overview. *Occupational Medicine*, 54, 283-289.

Endler, N. S. (1976). The case for Person-Situation Interactions. *Canadian Psychological Review*, 16, 12-21.

Feldt, T. (1997). The role of sense of coherence in wellbeing at work: Analysis of the main and moderator effects. *Work and Stress, 11*, 134-147.

Freudenberger, H. (1974). Staff burnout. *Journal of Social Issues, 30*, 159-165.

Gilbar, O. (1998). Relationship between burnout and sense of coherence in health social workers. *Social Work in Health Care, 36*(3), 39-49.

Glass, D. C., & McKnight, J. D. (1996). Perceived control, depressive symptomatology, and professional burnout: A review of the evidence. *Psychology and Health, 11*, 23-48.

Golembiewski, R. T., Munzenrider, R. F., & Stevenson, J. G. (1986). *Stress in Organizations: Toward a phase model of burnout*. New York, NY: Praeger.

Gropp, L., Geldenhuys, D., & Visser, D. (2007). Psychological wellness constructs: Relationships and group differences. *South African Journal of Industrial Psychology, 33*(3), 24-34.

Harry, N., & Coetzee, M. (2011). Sense of coherence, affective wellbeing and burnout in a South African higher education institution call centre. *South African Journal of Industrial Psychology, 35*(2), 26-46.

Hittner, J. B. (2000). Novel method for analyzing multifaceted personality scales: sense of coherence and depression as an example. *Journal of Psychology, 134*(2), 199-209.

Jacobs, D., Mostert, K., & Pienaar, J. (2008). The experience of work-life interaction in the Northern Cape mining industry: An exploratory study. *South African Journal of Economic and Management Sciences, 11*(1), 17-36.

Kinicki, A. J., & Vecchio, R. P. (1994). Influences on the quality of superior-subordinate relations: the role of time pressure, organisational commitment and locus of control. *Journal of Organisational Behaviour, 15*, 75-82.

Labuschagne, M., Bosman, J., & Buitendach, J. H. (2005). Job insecurity, job satisfaction and work locus of control of employees in a government organisation. *South African Journal of Human Resource Management*, 3(2), 26-35.

Levert, T., Lucas, M., & Ortlepp, K. (2000). Burnout in psychiatric nurses: contributions of the work environment and sense of coherence. *South African Journal of Psychology*, 30, 36-43.

Luthans, F. (2008). *Organizational Behavior*. (11<sup>th</sup> ed.). Boston: McGraw-Hill

Maram, A., & Miller, K. (1998). An empirical assessment of the construct "Work Locus of Control". *South African Journal of Industrial Psychology*, 24(3), 48-51.

Masia, U., & Pienaar, J. (2011). Unravelling safety compliance in the mining industry: examining the role of work stress, job insecurity, satisfaction and commitment as antecedents. *South African Journal of Industrial Psychology*, 37(1), Art.#937, 10 pages. <http://dx.doi.org/10.1402/sajip.v37i1.937>

Maslach, C. (1976). Burned-out. *Human Behaviour*, 5(9), 16-22.

Maslach, C. (1982). *Burnout. The cost of caring*. Englewood Cliffs, New Jersey: Prentice-Hall.

Maslach, C., & Jackson, S. (1981). The measurement of experienced burnout. *Journal of Occupational Behaviour*, 2, 99-113.

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach burnout inventory manual* (3rd ed.). Palo Alto, CA.: Consulting Psychologists Press.

Maslach, C., & Leiter, M. P. (1997). *The truth about burnout*. San Francisco, CA: Wiley.

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52, 397-422.

Nunnally, J., & Bernstein, I. H. (1994). *Psychometric theory* (3<sup>rd</sup> ed.). New York, NY: McGraw-Hill.

Oldfield, G. & Mostert, K. (2007). Job Characteristics, Ill Health and Negative Work-Home Interference in the Mining Industry. *SA Journal of Industrial Psychology*, 33(2), 68-75.

Pines, A. M., Aronson, E., & Kafry, D. (1981). *Burnout from tedium to personal growth*. New York, NY: Free Press.

Pule, T. (2011). Mining activities and occupational health and safety at work. *African Newsletter on Occupational Health and Safety*, 21(1), 4-7.

Rothmann, S. (2004). Burnout, psychological strengths and coping strategies of senior managers in a manufacturing organisation. *Management Dynamics*, 13(4), 26-37.

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

Rothmann, S., Jackson, L. T. B., & Kruger, M. M. (2003). Burnout and job stress in a local government: The moderating effect of sense of coherence. *South African Journal of Industrial Psychology*, 29(4), 52-60.

Rothmann, S., & Malan, H. (2003). Koherensiesin, selfdoeltreffendheid, lokus van beheer en uitbranding by maatskaplike werkers. *South African Journal of Industrial Psychology*, 29(4), 43-51.

Rothmann, S., Malan, M. M., & Rothmann, J. C. (2001, August). Sense of coherence, coping and burnout in a corporate pharmacy group: Paper presented at the 7<sup>th</sup> Annual PsySSA Conference, 13-17 August. Johannesburg.

Rothmann, S., & Van Rensburg, P. (2001, May). *Suicide ideation in the South African Police Services*. Paper presented at the 10<sup>th</sup> European Congress of Work and Organisational Psychology, 16-19 May. Prague, Czech Republic.

Rotter, J. B. (1966). Generalized expectations for internal versus external control of reinforcement. *Psychological Monographs*, 80, 1-28.

Rotter, J. (1992). Some comments on the “cognates of personal control”. *Applied and Preventative Psychology*, 1, 127-129.

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

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

Schepers, J. M. (2005). The construction of a normative scale of locus of control. *SA Journal of Industrial Psychology*, 31(3), 1-11.

Schepers, J. M., Gropp, L., & Geldenhuys, D. J. (2006). The factor structure, metrical properties, and convergent validity of the third edition (1999) of the locus of control inventory. *SA Journal of Industrial Psychology*, 32(2), 1-8.

Schutte, N., Toppinen, S., Kalimo, R., & Schaufeli, W. B. (2000). The factorial validity of the Maslach Burnout Inventory - General Survey (MBI-GS) across occupational groups and nations. *Journal of Occupational and Organizational Psychology*, 73(1), 53-66.

Spector, P. E. (1988). Development of the work locus of control scale. *Journal of Occupational Psychology*, 61, 335-340.

Spector, P. E. (2003). *Industrial and Organizational Psychology: research and design* (3<sup>rd</sup> ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Spector, P. E. (2006). International norms for the Work Locus of Control Scale. Retrieved 31 May, 2014, from <http://shell.cas.usf.edu/~pspector/scales/wlcsnorm.html>

SPSS 20.0 [computer software] (2011). Chicago, IL: SPSS Incorporated.

Storm, K., & Rothmann, S. (2003). A psychometric analysis of the Maslach Burnout Inventory – General survey in the South African Police service. *South African Journal of Psychology*, 33(4), 219-226.

Strümpfer, D. J. W. (1990). Salutogenesis: A new paradigm. *South African Journal of Psychology*, 20(4), 264-276.

Strümpfer, D. J. W., & Wissing, M. P. (1998, September). *Review of South African data on the sense of coherence scale as a measure of fortigenesis and salutogenesis*. Paper presented at the 4<sup>th</sup> Annual Congress of the Psychological Society of South Africa, 8-11 September. Cape Town.

Strydom, S. C., & Meyer, J. C. (2002). 'n Ondersoek na die bronne van werkstevredenheid en werkstres onder middelvlak bestuurders in die Wes-Kaap. *South African Journal of Psychology*, 28(2), 15-22.

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

Van Jaarsveld, J. (2004). *The relationship between, burnout, coping and sense of coherence amongst engineers and scientists*. (Unpublished Master's dissertation). University of South-Africa, Pretoria.

Viljoen, A. (2013). *Burnout, coping and sense of coherence in an engineering organisation*. (Unpublished Master's dissertation). University of South-Africa, Pretoria.

## **CHAPTER 4**

### **4. CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS**

The research is concluded in Chapter 4 by providing an integrated interpretation of the research results. The limitations to the study are discussed and recommendations are made for organisations and future research.

#### **4.1. CONCLUSIONS**

The dissertation intended to investigate the relationship between sense of coherence, work locus of control and burnout amongst mid-level managers in underground coal mining operations in Mpumalanga. The research expected to determine the incidence of burnout in the target group and to determine if the salutogenic constructs, sense of coherence and work locus of control, can predict burnout.

The specific literature aims were to conceptualise each of the constructs, namely sense of coherence, work locus of control and burnout, as well as to investigate the relationship between the constructs. This was obtained by means of a literature review. The research strategy was to focus primarily on seminal works to define the constructs and to review their origin, paradigmatic orientation and characteristics. The seminal literature was synthesized with contemporary literature to establish how the constructs manifest in organisational settings, as well as amongst mid-level managers. Lastly, the theoretical relationships between the constructs were investigated.

Sense of coherence is defined as a person's disposition to experience life demands as predictable and making sense (comprehensibility); to believe in one's ability to meet the demands (manageability); and to find meaning in overcoming these demands (meaningfulness) (Antonovsky, 1984, 1987; Strümpfer, 1990).

A distinction is made between individuals with an internal locus of control and individuals with an external locus of control. Individuals with an internal locus of

control perceive outcomes or life events to be the result of their own choices and behaviour. Externals believe these outcomes to be the result of external forces such as chance, luck, fate and/or significant others (Rotter, 1966, 1992; Schepers, 2005; Spector, 1988). Work locus of control is a domain specific measurement of locus of control in the organisational setting and is based on the notion that behaviour is determined by the interaction between an individual's personality characteristics and his/her environment (Endler, 1976; Maram & Miller, 1998; Rotter, 1966; Spector, 1988).

Burnout was conceptualized as a syndrome of exhaustion, cynicism and reduced professional efficacy (Maslach et al., 1996; Maslach & Leiter, 1997). Burnout is the result of a gradual deterioration in the individual's ability to cope with chronic stress (Brill, 1984; Levert et al., 2000; Storm & Rothmann, 2003).

The inverse relationship between the two salutogenic constructs sense of coherence and work locus of control on the one hand and burnout on the other hand is well supported in literature. Several researchers confirmed that a person with a strong sense of coherence tends to view demands as comprehensible, manageable and meaningful, and will, therefore, be more likely to combat stressors. Individuals with a strong sense of coherence are less likely to hold negative beliefs about the work place, become exhausted and perceive their competence as inferior (Harry & Coetzee, 2011; Gilbar, 1998; Levert et al., 2000; Rothmann et al., 2003; Rothmann, 2004; Rothmann et al., 2001; Van der Colff & Rothmann, 2009; Van Jaarsveld, 2004; Viljoen, 2013). Similarly, individuals with an internal locus of control will believe in their own ability to overcome stressful situations and will, therefore, be less prone to burn out (Akça & Yaman, 2010; Glass & McKnight, 1996; Rothmann, 2004; Rothmann & Malan, 2003; Schepers et al., 2006).

The specific aims of the empirical study was to determine the incidence of each of the constructs in the sample group; the relationship between the constructs; and whether the two salutogenic constructs, sense of coherence and work locus of control, can be used as predictors of burnout.

The research results indicated that the sample group of mid-level managers in underground coal mining operations in Mpumalanga did not experience high levels of burnout. Despite being exposed to a variety of stress-inducing demands, the sample group experienced low levels of exhaustion, and moderate levels of cynicism and reduced efficacy. The low to moderate levels of burnout may be associated with their strong sense of coherence. Work locus of control means for the sample group was considered moderate, with a slight inclination towards externality.

A statistically significant negative correlation was found between sense of coherence and burnout, which confirms the research by Harry and Coetzee (2011), Gilbar (1998), Levert et al. (2000), Rothmann et al. (2003), Rothmann (2004), Rothmann et al. (2001), Van der Colff and Rothmann (2009), Van Jaarsveld (2004) and Viljoen (2013). The individual with a strong sense of coherence tends to view events as comprehensible, manageable and having meaning and is less prone to experience exhaustion, cynicism and reduced professional efficacy associated with burnout (Rothmann et al. 2003; Van der Colff & Rothmann, 2009).

Internal work locus of control displayed a statistically significant negative relationship with exhaustion, cynicism and reduced professional efficacy. A person who views life outcomes as the result of his/her own choices and behaviour, is more likely to take control of adverse situations (Daniels & Guppy, 1994; Schepers et al., 2006) and will subsequently be less likely to suffer from exhaustion, cynicism and reduced professional efficacy as a result of burnout (Akça & Yaman, 2010; Glass & McKnight, 1996; Rothmann, 2004; Rothmann & Malan, 2003; Schepers et al., 2006).

Multiple regression results indicated that sense of coherence and work locus of control predicted a large portion of the variance in exhaustion and cynicism, and confirms findings from Rothmann (2004), Van der Colff and Rothmann (2009) and Viljoen (2013). Similar to the findings of Van der Colff and Rothmann (2009) and Viljoen (2013), only sense of coherence served as a predictor of professional efficacy. Work locus of control did not make a statistically significant contribution in the prediction of professional efficacy. Van der Colff and Rothmann (2009) ascribed this phenomenon to the notion that professional efficacy is a personality characteristic, rather than an

outcome of burnout, as was postulated by Cordes and Dougherty (1992) and Schaufeli (2003).

The empirical findings of the research thus confirmed the hypotheses that sense of coherence and work locus of control are inversely related to the incidence of burnout, as well as the prediction that a person with a strong sense of coherence and internal work locus of control is likely to have a lower propensity to burn out.

#### **4.2. LIMITATIONS**

The limitations on the literature study included a limited number of research papers on work locus of control. Resources related to the relationships between the constructs in the mining industry were scarce and no resources could be found that measure the relationships of the constructs amongst mid-level managers in the mining industry.

The empirical limitations of the study are as follows:

The cross-sectional research design cannot explain causality between the variables. Also, the obtained sample size is too small to enable generalisation of the research findings to other mid-level managers in coal mining operations.

The method variance in the sampling strategy could have had an implication on the common variance of the measure. The method variance in the sampling strategy entailed the use of both electronic surveys and paper-based surveys. The mid-level managers who received electronic links to the survey had the opportunity to complete the questionnaires at a time that was convenient to them, whilst the employees who completed paper-based questionnaires were targeted after shaft and communication meetings. Variables such as fatigue, haste, pressure to return to the work place could be a possibility in the last group and could have impacted on their responses. The exclusive use of self-report measures can also contribute to method variance.

In measuring the incidence of sense of coherence and work locus of control in the sample group, the mean scores of the sample group was compared to South African norms.

These norms were, however, not specific to the mining industry or to mid-level managers in the mining industry. The South African norm for work locus of control (Spector, 2006) is based on a small sample, making the generalisation thereof questionable. Burnout was measured against an international norm base, which is also a limitation to the study

In terms of the measurement of burnout, some researchers believe that item 13 of the MBI-GS instrument (“I just want to do my job and not be bothered”) is ambivalent and opt to omit item 13 when administering the MBI-GS (Schutte, Toppinen, Kalimo, & Schaufeli, 2000; Storm & Rothmann, 2003) . However, item 13 was not omitted in this research, which could have had an impact on the empirical results for the sample group.

### **4.3. RECOMMENDATIONS**

Considering the conclusion and limitations, the following recommendations can be formulated for the organisation and future research:

Whilst one could suggest that the organisation should focus their future recruitment strategies on selecting employees with a strong sense of coherence and an internal work locus of control, the recommendation has no practical value for the current work force. The organisation should, therefore attempt to influence sense of coherence in the current workforce, by providing an orderable and structured work environment; by facilitating the creation of meaning; as well as by providing resources to assist with the manageability of demands.

Organisations could assist employees to understand their roles within the greater organisation in order to facilitate comprehensibility. Also, by structuring work and the flow of information in a clear, orderly, consistent and consequential manner, the development of strong comprehensibility can be facilitated (Rothmann et al., 2003).

Furthermore, the organisation could focus their attention on balancing job demands and resources to positively impact the manageability component of sense of coherence. Antonovsky (1987) stated that manageability in the workplace refers to experiences of

appropriate load balance, as well as having sufficient resources such as materials, equipment, knowledge and skills, supervisory support, feedback and autonomy to meet the demands. Several researchers confirmed the value of balancing job demands and job resources in preventing burnout (Demerouti et al., 2001; Rothmann et al., 2003; Schaufeli & Enzmann, 1998),

Meaningfulness in the workplace can be influenced by allowing employees to participate in strategy development and make autonomous decisions regarding their work. By understanding the way in which their unique contribution affects the success of the organisation or even society as a whole, employees can find a sense of meaning. Rothmann et al. (2003) recommended that employees should have some degree of independence, freedom of choice, as well as freedom to disagree with superiors in order to experience meaningfulness.

Labuschagne et al. (2005) suggested that locus of control may be influenced by encouraging accountability in the organisation. Individuals with internal locus of control are able to view outcomes as a direct consequence of their own behaviour and/or decisions. Organisations can stimulate internal locus of control by reinforcing behaviours in such a manner that employees see a direct link between the behaviour and the consequences thereof.

Future research on the relationship between sense of coherence, work locus of control and burnout amongst mid-level managers in underground coal mining operations should include larger sample sizes to enable generalisation of the findings. The measurement of occupational stress could provide valuable insight into the target group's subjective experience of stress as a result of the numerous demands made on them. The inclusion of other salutogenic constructs such as self-actualisation, hardiness, coping, potency and self-efficacy could also provide more insight into the target group's ability to stay well. Longitudinal studies should be applied to evaluate interventions to reduce burnout.

#### **4.4. CHAPTER SUMMARY**

Chapter 4 provided a brief overview of the conclusions from the literature review and empirical study. The limitations of the study were reported and recommendations were made based on the research findings.

## REFERENCES

- Akça, F., & Yaman, B. (2010). The effects of internal-external locus of control variables on burnout levels of teachers. *Procedia Social and Behavioural Sciences*, 2(2010), 3976-3980.
- Amponsah-Tawiah, K., Jain, A., Leka, S., Hollis, D., & Cox, T. (2013). Examining psychosocial and physical hazards in the Ghanaian mining industry and their implications for employees' safety experience. *Journal of Safety Research*, 45, 75-84.
- Antonovsky, A. (1979). *Health, stress and coping*. San Francisco, CA: Jossey-Bass.
- Antonovsky, A. (1983). *The sense of coherence: Development of a research instrument*. (Newsletter and Research Reports, 1, 1-11). Tel Aviv: Tel Aviv University, W. S. Schwartz Research Centre for Behavioural Medicine.
- Antonovsky, A. (1984). The sense of coherence as a determinant of health. In J.D. Matarazzo, S.M. Weiss, J.A. Herd, M.E. Miller & S.M. Weiss (Eds.), *Behavioral health: A handbook of health enhancement and disease prevention* (pp. 114-129). New York, NY: Wiley-Interscience.
- Antonovsky, A. (1987). *Unravelling the mystery of health: How people manage stress and stay well*. San Francisco, CA: Jossey-Bass.
- Antonovsky, A. (1993). The structure and properties of the sense of coherence scale. *Social Science and Medicine*, 36(6), 725-733.
- Bergh, Z. C., & Theron, A. L. (1999). *Psychology in the work context*. Johannesburg: Oxford University Press.
- Bothma, A. C., & Schepers, J. M. (1997). The role of locus of control and achievement motivation in the work performance of black managers. *South African Journal of Industrial Psychology*, 23(3), 44-52.

Brill, P. L. (1984). The need for an operational definition of burnout. *Family and Community Health*, 6, 143-150.

Campbell, K. (2002). The four challenges facing SA mine managers. *Mining Weekly*, Retrieved 11 April, 2014, from <http://www.miningweekly.com>

Cilliers, F. (2002). Salutogenic coping with burnout among nurses: a qualitative study. *South African Journal of Labour Relations*, 26(4), 61-85.

Cilliers, F. & Coetzee, S. C. (2003). The theoretical-empirical fit between three psychological wellness constructs: Sense of coherence, learned resourcefulness, and self-actualisation. *South African Journal of Labour Relations*, 27(1), 4-24.

Cilliers, F. & Kossuth, S. P. (2004). The reliability and factor structure of three measures of salutogenic functioning. *South African Journal of Labour Relations*, 28(2), 59-76.

Coetzee, M. G., Viviers, A. M., & Visser, D. (2006). Managerial level, managerial motivation and sense of coherence. *South African Journal of Industrial Psychology*, 32(3), 35-42.

Coetzee, S., & Cilliers, F. (2001). Psychofortology: Explaining coping behaviour in organisations. *The Industrial-Organisational Psychologist*, 38(4), 62-68.

Coetzer, E. L., & Schepers, J. M. (1997). Die verband tussen lokus van beheer en die werkprestasie van swart bemarkers in die lewensversekeringsbedryf. *Tydskrif vir Bedryfsielkunde*, 23(1), 34-41.

Cooper, C. L. (2000). *Theories of organizational stress*. Oxford: University Press.

Cordes, C. L., & Dougherty, T. W. (1993). A review and integration of research on job burnout. *Academy of Management Review*, 18(4), 621-656.

Daniels, K., & Guppy, A. (1994). Occupational stress, social support, job control and

psychological well being. *Human Relations*, 47, 1523-1544.

De Jager, M. (2006). *The relationship between Work Locus of Control and Social Wellbeing*. (MA dissertation). University of South-Africa, Pretoria

Deloitte. (2013). *Tough choices facing the South African mining industry*. Retrieved 10 April, 2014, from <http://www.deloitteblog.co.za/2013/08/15>

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W.B. (2001). The Job Demands-Resources model of burnout. *Journal of Applied Psychology*, 86, 499-512.

D'Oliviera, D. (2013). Demand for Southern African coal set to increase. *Mining Weekly*, Retrieved 30 May, 2014, from <http://www.miningweekly.com>

Donoghue, A. M. (2004). Occupational health hazards in mining: an overview. *Occupational Medicine*, 54, 283-289.

Endler, N. S. (1976). The case for Person-Situation Interactions. *Canadian Psychological Review*, 16, 12-21.

Etzion, D. (1984). Moderating effect of social support on the stress-burnout relationship. *Journal of Applied Psychology*, 4, 615-622.

Evans, B. K., & Fisher, D. G. (1993). The nature of burnout: a study of the three-factor model of burnout in human service and non-human service samples. *Journal of Occupational and Organizational Psychology*, 66, 29-38.

Feldt, T. (1997). The role of sense of coherence in wellbeing at work: Analysis of the main and moderator effects. *Work and Stress*, 11, 134-147.

Feldt, T., Kivimaki, M., Rantala, A., & Tolvanen, A. (2004). Sense of coherence and work characteristics: a cross-lagged structural equation model among managers. *Journal of Occupational and Organizational Psychology*, 27(3), 323-341.

- Freudenberger, H. (1974). Staff burnout. *Journal of Social Issues*, 30, 159-165.
- Garden, A. M. (1987). Depersonalization: A valid dimension of burnout? *Human Relations*, 40, 545-560.
- Gilbar, O. (1998). Relationship between burnout and sense of coherence in health social workers. *Social Work in Health Care*, 36(3), 39-49.
- Glass, D. C., & McKnight, J. D. (1996). Perceived control, depressive symptomatology, and professional burnout: A review of the evidence. *Psychology and Health*, 11, 23-48.
- Golembiewski, R. T., Munzenrider, R. F., & Stevenson, J. G. (1986). *Stress in Organizations: Toward a phase model of burnout*. New York, NY: Praeger.
- Gropp, L., Geldenhuys, D., & Visser, D. (2007). Psychological wellness constructs: Relationships and group differences. *South African Journal of Industrial Psychology*, 33(3), 24-34.
- Harry, N., & Coetzee, M. (2011). Sense of coherence, affective wellbeing and burnout in a South African higher education institution call centre. *South African Journal of Industrial Psychology*, 35(2), 26-46.
- Heider, F. (1958). *The Psychology of Interpersonal Relations*. New York, NY: Wiley.
- International Labour Organization (ILO). (2010). *Mining: a hazardous work*. Geneva: International Labour Organization.
- Jacobs, D., Mostert, K., & Pienaar, J. (2008). The experience of work-life interaction in the Northern Cape mining industry: An exploratory study. *South African Journal of Economic and Management Sciences*, 11(1), 17-36.
- Judge, T. A., Locke, E. A., Durham, C. C., & Kluger, A. N. (1998). Dispositional effects on job and life satisfaction: The role of core evaluations. *Journal of Applied Psychology*,

83, 17-34.

Kalimo, R., & Vuori, J. (1991). Work factors and health: the predictive role of pre-employment experiences. *Journal of Occupational Psychology*, 64, 97-115

Kinicki, A. J., & Vecchio, R. P. (1994). Influences on the quality of superior-subordinate relations: the role of time pressure, organisational commitment and locus of control. *Journal of Organisational Behaviour*, 15, 75-82.

Klein, J., & Wasserstein-Warnet, M. (2000). Predictive validity of the locus of control test in selection of school administrators. *Journal of Educational Administration*, 38(1), 7-25.

Kossuth, S. P., & Cilliers, F. (2002). The relationship between leadership dimensions, cultural beliefs and salutogenic functioning. *South African Journal of Labour Relations*, Autumn, 65-95.

Kraft, U., Mussman, C., Rimann, M., Udris, I., & Muheim, M. (1993). Resources of salutogenesis: Personal and organizational factors. *European Journal of Personality*, 7(4), 233-235.

Kreitner, R., & Kinicki, A. (2004). *Organizational behaviour (6<sup>th</sup> ed.)*. Boston, MA: Irwin McGraw-Hill.

Labuschagne, M., Bosman, J., & Buitendach, J. H. (2005). Job insecurity, job satisfaction and work locus of control of employees in a government organisation. *South African Journal of Human Resource Management*, 3(2), 26-35.

Lazarus, R. S., & Folkman, S. (1984). Coping and adaptation. In W. D. Gentry (Ed.), *Handbook of behavioural medicine* (pp. 282-325). New York, NY: Guilford.

Lefcourt, H. M. (1966). Internal versus internal control of reinforcement. *Psychological Bulletin*, 63(4), 206-220.

Leiter, M. P., & Maslach, C. (1988). The impact of interpersonal environment on burnout and organizational commitment. *Journal of Organizational Behavior*, 9, 297-308.

Le Roux, C. A., Schmidt, C., & Schepers, J. M. (1997). Achievement motivation, locus of control and individuality as predictors of participative management in the South African educational environment. *Journal of Industrial Psychology*, 23(3), 1-8.

Levert, T., Lucas, M., & Ortlepp, K. (2000). Burnout in psychiatric nurses: contributions of the work environment and sense of coherence. *South African Journal of Psychology*, 30, 36-43.

Louw, D. A. & Edwards, D. J. A. (1998). *Sielkunde. 'n Inleiding vir student in Suider-Afrika* (2<sup>nd</sup> ed.). Johannesburg: Heinemann Voortgesette Onderwys

Luthans, F. (2008). *Organizational Behavior*. (11<sup>th</sup> ed.). Boston: McGraw-Hill

Maram, A., & Miller, K. (1998). An empirical assessment of the construct "Work Locus of Control". *South African Journal of Industrial Psychology*, 24(3), 48-51.

Masia, U., & Pienaar, J. (2011). Unravelling safety compliance in the mining industry: examining the role of work stress, job insecurity, satisfaction and commitment as antecedents. *South African Journal of Industrial Psychology*, 37(1), Art.#937, 10 pages. <http://dx.doi.org/10.1402/sajip.v37i1.937>

Maslach, C. (1976). Burned-out. *Human Behaviour*, 5(9), 16-22.

Maslach, C. (1982). *Burnout. The cost of caring*. Englewood Cliffs, New Jersey: Prentice-Hall.

Maslach, C., & Jackson, S. (1981). The measurement of experienced burnout. *Journal of Occupational Behaviour*, 2, 99-113.

Maslach, C., & Jackson, S. (1986). *MBI: Maslach burnout inventory: manual research edition*. Palo Alto, CA: Consulting Psychologists Press.

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach burnout inventory manual* (3<sup>rd</sup> ed.). Palo Alto, CA.: Consulting Psychologists Press.

Maslach, C., & Leiter, M. P. (1997). *The truth about burnout*. San Francisco, CA: Wiley.

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52, 397-422.

Miller, K. I., Ellis, B. H., Zook, E. G., & Lyles, J. S. (1990). An integrated model of communication, stress and burnout in the workplace. *Communication Research*, 17, 200-326.

Mouton, J. & Marais, H. C. (1993). *Basic concepts in the methodology of social sciences*. Pretoria: Human Sciences Research Council.

O'Brien, G. E. (1986). *Psychology of work unemployment*. New York, NY: Wiley.

Oldfield, G. & Mostert, K. (2007). Job Characteristics, Ill Health and Negative Work-Home Interference in the Mining Industry. *SA Journal of Industrial Psychology*, 33(2), 68-75.

Phares, E. J. (1976). *Locus of control in personality*. Morristown, NJ: General Learning Press.

Pines, A. M., Aronson, E., & Kafry, D. (1981). *Burnout from tedium to personal growth*. New York, NY: Free Press.

Pretorius, M., & Rothmann, S. (2001). Die verband tussen koherensiesin, lokus van beheer, selfdoeltreffendheid en werkstevredenheid. *South African Journal of Industrial Psychology*, 27(1), 25-31.

Pule, T. (2011). Mining activities and occupational health and safety at work. *African Newsletter on Occupational Health and Safety*, 21(1), 4-7.

Roediger, H. L., Capaladi, E. D., Paris, S. G., & Polivy, J. (1991). *Psychology* (3<sup>rd</sup> ed.) New York, NY: Harper Collins Publishers.

Rosalak, T. K., & Hapmson, S. E. (1991). A new typology of health behaviours for personality-health predictions: The case of locus of control. *European Journal of Personality*, 5, 151-168.

Rothmann, S. (2004). Burnout, psychological strengths and coping strategies of senior managers in a manufacturing organisation. *Management Dynamics*, 13(4), 26-37.

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

Rothmann, S., Jackson, L. T. B., & Kruger, M. M. (2003). Burnout and job stress in a local government: The moderating effect of sense of coherence. *South African Journal of Industrial Psychology*, 29(4), 52-60.

Rothmann, S., & Malan, H. (2003). Koherensiesin, selfdoeltreffendheid, lokus van beheer en uitbranding by maatskaplike werkers. *South African Journal of Industrial Psychology*, 29(4), 43-51.

Rothmann, S., Malan, M. M., & Rothmann, J. C. (2001, August). Sense of coherence, coping and burnout in a corporate pharmacy group: Paper presented at the 7<sup>th</sup> Annual PsySSA Conference, Johannesburg.

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

Rothmann, S. & Van Rensburg, P. (2001, May). *Suicide ideation in the South African Police Services*. Paper presented at the 10<sup>th</sup> European Congress of Work and Organisational Psychology, Prague, Czech Republic.

Rotter, J. B. (1966). Generalized expectations for internal versus external control of reinforcement. *Psychological Monographs*, 80, 1-28.

Rotter, J. B. (1975). Some problems and misconceptions related to the construct of internal versus external control of reinforcement. *Journal of Consulting and Clinical Psychology*, 43(1), 56-67.

Rotter, J. (1992). Some comments on the “cognates of personal control”. *Applied and Preventative Psychology*, 1, 127-129.

Rotter, J. B., Chance, J. E., & Phares, E. J. (1972). *Applications of a Social Learning Theory of Personality*. New York, NY: Rinehart and Winston.

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

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

Schepers, J. M. (2005). The construction of a normative scale of locus of control. *South African Journal of Industrial Psychology*, 31(3), 1-11.

Schepers, J. M., Gropp, L., & Geldenhuys, D. J. (2006). The factor structure, metrical properties, and convergent validity of the third edition (1999) of the locus of control inventory. *South African Journal of Industrial Psychology*, 32(2), 1-8.

Schutte, N., Toppinen, S., Kalimo, R., & Schaufeli, W. B. (2000). The factorial validity of the Maslach Burnout Inventory - General Survey (MBI-GS) across occupational

groups and nations. *Journal of Occupational and Organizational Psychology*, 73(1), 53-66.

Snyder, C. R., & Lopez, S. J. (2009). *Oxford handbook of positive psychology*. New York, NY: Oxford University Press.

Spector, P. E. (1982). Behavior in organizations as a function of loss control. *Psychological Bulletin*, 91, 482-497.

Spector, P. E. (1988). Development of the work locus of control scale. *Journal of Occupational Psychology*, 61, 335-340.

Spector, P. E. (2003). *Industrial and Organizational Psychology: research and design* (3<sup>rd</sup> ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Spector, P. E. (2006). International norms for the Work Locus of Control Scale. Retrieved 31 May, 2014, from <http://shell.cas.usf.edu/~pspector/scales/wlcsnorm.html>

SPSS 20.0 [computer software] (2011). Chicago, IL: SPSS Incorporated.

Storm, K., & Rothmann, S. (2003). A psychometric analysis of the Maslach Burnout Inventory – General survey in the South African Police service. *South African Journal of Psychology*, 33(4), 219-226.

Strümpfer, D. J. W. (1990). Salutogenesis: A new paradigm. *South African Journal of Psychology*, 20(4), 264-276.

Strümpfer, D. J. W. (1995). The origins of health and strength: From salutogenesis to fortigenesis. *South African Journal of Psychology*, 25(2), 81-89.

Strümpfer, D. J. W. & Wissing, M. P. (1998, September). *Review of South African data on the sense of coherence scale as a measure of fortigenesis and salutogenesis*. Paper presented at the National Congress of the Psychology Society of

South Africa, Durban.

Strydom, S. C., & Meyer, J. C. (2002). 'n Ondersoek na die bronne van werkstevredenheid en werkstres onder middelvlak bestuurders in die Wes-Kaap. *South African Journal of Psychology*, 28(2), 15-22.

Taylor, C. M., Schepers, J. M., & Crous, F. (2006). Locus of control in relation to flow. *South African Journal of Psychology*, 32(3), 63-71.

Terre Blanche, M., Durrheim, K. & Painter, D. (2006). *Research in practice. Applied methods for the social sciences*. Cape Town: UCT Press.

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

Van Dierendonck, D., Schaufeli, W. B., & Buunk, B. P. (2001). Towards a process model of burnout: results from a secondary analysis. *European Journal of Work and Organizational Psychology*, 10, 41-52.

Van Jaarsveld, J. (2004). *The relationship between, burnout, coping and sense of coherence amongst engineers and scientists*. (Unpublished Master's dissertation). University of South-Africa, Pretoria.

Van Staden, J. F., Schepers, J. M., & Rieger, H. S. (2000). Lokus van beheer en transformasionele leierskap. *Journal of Industrial Psychology*, 26(3), 8-14.

Viljoen, A. (2013). *Burnout, coping and sense of coherence in an engineering organisation*. (Unpublished Master's dissertation). University of South-Africa, Pretoria.

Warr, P. (2002). The study of well-being, behaviour and attitudes. In P. Warr (Ed.). *Psychology at Work*, (pp.1-25), London: Penquin Books.

Wissing, M. P., & Van Eeden, C. (1997, September). *Psychological well-being: A fortigenic conceptualization and empirical classification*. Paper presented at the Annual Congress of the Psychological Society of South Africa, Durban, South Africa.

Wissing, M. P., & Van Eeden, C. (2002). Empirical clarification of the nature of psychological well-being. *South African Journal of Psychology*, 32(1), 32-44.