

**BURNOUT, COPING AND SENSE OF COHERENCE IN AN ENGINEERING
ORGANISATION**

by

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**submitted in accordance with the requirements for
the degree of**

MASTER OF ARTS

in the subject

INDUSTRIAL AND ORGANISATIONAL PSYCHOLOGY

at the

UNIVERSITY OF SOUTH AFRICA

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NOVEMBER 2012

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 boundary of approximately 60 to 80 pages.

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, Alana Viljoen, student number 42467209, declare that 'Burnout, Coping and Sense of Coherence in an Engineering organisation is my own work, and that all the sources that I have used or have quoted from have been indicated and acknowledged by means of complete references.

SIGNATURE

DATE

ACKNOWLEDGEMENTS

I want to express my gratitude to the following individuals who made this research possible:

- My Heavenly Father for the strength, perseverance and ambition He instilled in me
- Prof. Sanet van der Westhuizen for sharing her knowledge, having patience and continuously guiding me
- My husband Hannes Viljoen for his continuous support and understanding
- The managers, participants and colleagues at Sasol Limited for allowing me to undertake this research
- Andries Masenge for the statistical analysis of the data
- My parents (Reginald and Corlia Smith) and parents in law (Jaap and Annetjie Viljoen) for their encouragement throughout the process
- All my friends for believing in me

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SUMMARY

Burnout can occur in any occupation and is a risk in the modern world of work. The objective of the study was to investigate how burnout, coping and sense of coherence are related and influence each other in an engineering environment. A Cross-sectional survey design was used in this descriptive study. The convenience sample consisted of 118 engineers and scientists at various levels in a global engineering organisation that is based in South Africa.

The Maslach Burnout Inventory (MBI), Coping Orientations to the Problems Experienced (COPE) and Sense of Coherence (SOC) questionnaires were administered for this quantitative study. A theoretical relationship was proved by means of a literature study and an empirical relationship proved that there is indeed a relationship between the constructs and that focus and venting of emotions as well as SOC are predictors of emotional exhaustion and cynicism. SOC also proved to be a predictor of professional efficacy.

KEY TERMS

Burnout, coping, sense of coherence, salutogenesis, occupational stress, professional efficacy, meaningfulness, depersonalisation, manageability, emotional exhaustion.

CHAPTER 1. SCIENTIFIC ORIENTATION TO THE RESEARCH

This dissertation focuses on burnout, coping and sense of coherence in an Engineering organisation. Chapter 1 contains the background and motivation, the problem statement, the aims, paradigm perspective, research design and method as well as the chapter layout.

1.1 BACKGROUND AND MOTIVATION

The world of today is constantly changing on the technological, economic and demographic fronts. These changes have a substantial effect on the labour in our organisations. Employees in the workplace are faced with many challenges such as continuous training, the looming risk of unemployment and the necessity to navigate the many global career challenges (Coetzee & Gunz, 2012). These challenges are career creation and sustaining that career in a world with decreased employment opportunities, diminished job security, fast-paced technology and increasing personal responsibility of up-skilling, employability, job satisfaction and lifelong learning (Marock, 2008; Pool & Sewell, 2007). When one brings it closer to home and look at the South African career environment, this environment has additional adverse factors such as a legacy of apartheid, skill shortages, and the pressure of employment equity (Department of Labour, 2009; Pauw, Oosthuizen & Van der Westhuizen, 2008). Rasool and Botha (2011) found that the skills shortage currently the order of the day severely affects socio-economic growth and development in South Africa.

It is necessary to address the effects of changes and the stress that it causes from not only an organisational, social and economic perspective but also from a psychological one (Pines, 2002). Stress indeed has an effect on all these levels and takes its toll on the employee's health. Therefore one of the key considerations in the organisation of today is the one of the results of stress, namely burnout.

The prevalence of burnout in the workforce is not only painful to the individual, but also costly to the organisation and society at large. Burnout severely affects the work and personal wellbeing of an individual (Cropanzano & Wright, 2001). Maslach and Leiter (1997) even went as far as to state that it erodes the soul. It can leave an employee with depleted energy levels, feelings of lack of control, helplessness, low motivational levels, being negative towards work, self and others, as well as emotionally exhausted. The organisation on the

other hand suffers due to high absenteeism and turnover, performance deficits and substance abuse (Du Plooy & Roodt, 2010; Glass, McKnight, & Valdimarsdottir, 1993).

Burnout is caused by the inability to effectively cope with stress and, as burnout is a possibility in all occupations, it is important for an organisation and individuals to learn more about effective coping strategies (Evans & Fisher, 1993; Isaksson et al., 2010; Rothmann, 2008). In research conducted by Strümpfer (2003) it is proposed that the thinking surrounding burnout, which is a pathogenic construct, should shift into a fortigenic direction. The salutogenic view (meaning the origin of health) preceded the fortigenic direction (the origin of strengths). Antonovsky (1979) introduced the salutogenic paradigm which shifts the focus from what is wrong with an individual rather to what makes an individual well. He literally turned the traditional question on the causes of disease upside down by asking how people maintain their health and positive attitude even under extreme circumstances. A lot of individuals remain well despite extreme stressors in their work and personal environments (Suominen & Lindström, 2008). Salutogenic functioning therefore equips individuals to cope more effectively with stressors. Sense of coherence, hardiness, locus of control and learned resourcefulness are salutogenic variables that may act as coping mechanisms to the individual. Strümpfer's (2003) theory supports this in that he developed and researched the term fortigenesis, which focuses on individuals' strengths and not their weaknesses.

According to Antonovsky (1987) an individual who is able to cope effectively is likely to have a strong sense of coherence and therefore the ability to select a particular coping strategy that seems most appropriate to the given situation that might lead to burnout. Coping on the other hand can be seen as the response to a stressful experience. Individuals will cope with these experiences by focussing on their goals that are attainable (Carver & Scheier, 1999, p.562). It appears that in order to successfully address burnout, one has to look to the influence that coping strategies and sense of coherence can have on burnout.

Research regarding the relationship between sense of coherence, coping and burnout that was conducted in a nursing and police environment respectively, has shown that a strong sense of coherence predicted lower levels of burnout (Van der Colff & Rothmann, 2009) with specific reference to emotional exhaustion, depersonalisation and higher levels of personal accomplishment. The results further revealed that a strong sense of coherence allows nurses to use active coping strategies such as seeking emotional/social support and thus deal with

occupational stressors in a problem-solving and more positive way (Van der Colff & Rothmann, 2009).

1.2 PROBLEM STATEMENT

Burnout can occur in any occupation, especially those that are in an above-average risk group regarding work stress (Demerouti, Bakker, Nachreiner & Schaufeli, 2000; Levert, Lucas & Ortlepp, 2000). Burnout is therefore a reality of our modern world and no organisation can afford to have employees suffering from emotional exhaustion, depersonalisation and lack of personal accomplishment (Van der Colff & Rothmann, 2009). Very little research could, however, be found on the phenomena in the specific occupations of engineers and scientists. The prevalence of unrealistic job expectations, unmet organisational expectations (Jackson, Schuler & Schwab, 1986) chronic daily stresses, critical life events (Etzion, 1984) and a gradual disillusionment in a search to receive a sense of existential meaning out of one's everyday work are known and well researched causes of burnout. Engineers and scientists are in occupations that are very challenging, require a lot of responsibility and which are usually occupied by above average intelligence, ambitious individuals. Taking this into account, engineers and scientists can very likely be victims of burnout.

This study contributes to the body of knowledge as it takes Industrial/Organisational (I/O) psychological concepts such as sense of coherence and coping styles and links them in unique combinations to burnout in order to establish a better understanding of how they can predict burnout in the engineering and scientist profession in South Africa. Very little research has been conducted in this regard.

This study is therefore a replication study of that of Van Jaarsveld (2004) and similar to the initial study, the relationship between burnout, sense of coherence and coping will be investigated in this specific Engineering organisation. It is however seven years since Van Jaarsveld (2004) conducted his research in this organisation and the organisation's context has changed significantly due to the skills scarcity, Broad Based Black Economic Empowerment (BBBEE) and the recession of 2009.

The experimental organisation is one that consists of approximately 27403 employees of which 3390 are engineers and scientists. The range stretches across all types in these

occupations such as chemical, industrial, mechanical, civil and electric electronic engineers. These employees are likely to have a BSc. degree and in several cases various post graduate qualifications. They are recognised as the backbone of the organisation and numerous interventions are initiated to ensure proper training and development as well as retention. The intellectual property of the organisation is its greatest asset and their employees' wellbeing is very important to them. On a day to day basis the employees are exposed to stressors such as maintenance shutdowns, large projects, ventures into unknown territory and projects in third world countries, competition from other similar organisations, safety and the continuous drive to be the best in the industry. All of the mentioned stressors naturally have an impact on the organisation's financial turnover as well as the employee's salary, incentive bonuses and the organisation's recognition schemes. In the two major areas where the organisation is located in South Africa one is continuously reminded of safety, quality and cost along with the organisation's underlying values of winning with people and continuous improvement (Sasol Code of Ethics, 2004).

The aim of this replication study is therefore to determine if the relationships found by Van Jaarsveld (2004) could be confirmed in the same organisation again.

Van Jaarsveld (2004) found relatively low to moderate levels of burnout on the Emotional Exhaustion sub-scale and relatively high levels of Personal Accomplishment. Active coping, expressing emotions, acceptance, seeking social support and turning to religion were most regularly used by his sample. Furthermore, his sample scored the lowest on behavioural disengagement, denial, restraint coping and suppression of competing activities. Active coping should, however, receive special mention as it was significantly higher (25.69) than the scores on the other coping dimensions. The study showed statistically significant negative relationships between emotional exhaustion and cynicism on the one hand and sense of coherence on the other hand, as well as a statistically significant positive relationship between professional efficacy and sense of coherence.

By re-establishing the above relationships it would build a stronger argument for the actual existence of the relationship since the previous study only studied the relationship at one specific point in time. The results of this study should be used to equip employees with the necessary coping strategies and enhance their sense of coherence in order to manage the degree of burnout in the organisation.

In order to address the above issues, this research is designed to answer the following literature and empirical questions:

The literature questions are as follow:

- How can burnout be conceptualised?
- How can coping be conceptualised?
- How can sense of coherence be conceptualised?
- What is the theoretical relationship between burnout, coping and sense of coherence?

The empirical questions are as follow:

- What is the empirical relationship between burnout, coping and sense of coherence amongst the target group?
- Can coping and sense of coherence be used as predictors of burnout?
- What are the recommendation that can be made in terms of the relationship for future effective organisational functioning and research?

1.3 AIMS

The following general and specific aims are formulated.

The general aim of this research is to investigate the relationship between burnout, coping and sense of coherence amongst engineers and scientists within a large engineering company in South Africa.

The specific aims relating to the literature review are to:

- conceptualise burnout
- conceptualise coping
- conceptualise sense of coherence
- conceptualise the theoretical relationship between burnout, coping and sense of coherence

The specific aims relating to the empirical study are to:

- determine the correlation between burnout, coping and sense of coherence.

- determine if coping and sense of coherence can be used as predictors of burnout.
- formulate recommendations in terms of the relationship for future effective organisation functioning and research.

1.4 THE PARADIGM PERSPECTIVE

The research is conducted within the Industrial and Organisational Psychology field. This field has developed from a problem-focused approach to include the domains of six sub-fields namely Personnel Psychology, Organisational Psychology, Career Psychology, Consumer Psychology, Ergonomics and Psychometrics (Barnard & Fourie, 2007). Industrial Psychologists of today contribute to training and development, change management, evaluation and assessment, organisational development, labour relations, strategic management, career management, psychometric testing, selection and placement, counselling and human resource management (Pienaar & Roodt, 2001). With reference to this research, burnout, coping and sense of coherence fall under personnel psychology as they influence the wellbeing of the employee.

This paradigm's main focus is on what contributes to our understanding of the development and maintenance of health (Suominen & Lindström, 2008). There are three aspects to keep in mind when one starts to think salutogenically (Strümpfer, 1990). The first is to disregard the notion that people are either suffering from disease, or healthy, or on the "health-ease/disease continuum" (Antonovsky, 1987, p. 3). Secondly the salutogenic model does away with the assumption that stress is always bad for the individual. It also looks into the possibility that stress may have "salutary consequences" (Antonovsky, 1987, p. 53). Thirdly, one has to focus on the "deviant case" (Antonovsky, 1987, p. 11). The deviant case is those individuals who make a success and cope, no matter if all the odds are against them and regardless of their negative or stressful circumstances. The variables within this paradigm are sense of coherence, hardiness, locus of control and learned resourcefulness (Antonovsky, 1987). Sense of coherence and coping are the constructs that are researched in this study.

Positivism is the empirical paradigm from which the influences of sense of coherence and coping on burnout are explored in this study. Positivism is the view that human behaviour amongst other aspects ought to be studied using only the methods of the natural sciences. It emphasizes empirical observation as the appropriate methodology to study social science

(Colman, 2009). This paradigm as applicable to this study as the study is quantitative of nature.

1.5 RESEARCH DESIGN

The research approach, method, participants, measuring instruments, procedure and statistical analysis are as follows:

1.5.1 Research approach

The objective of the research is descriptive in nature and the study is conducted to determine the salutogenic variables' relationship with burnout amongst engineers and scientists. The research is quantitative. The aim of descriptive research is to attempt to describe certain phenomena and relationships between phenomena in already defined subject-related paradigms (Mouton & Marais, 1992). This specific research approach therefore answers the research questions and fulfils the aims of this study.

1.5.2 Research method

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

Phase 1: Literature review

Once the conceptualising of the constructs of burnout, coping and sense of coherence is done, the integration of the theoretical findings follows in order to determine the theoretical relationship amongst them. Information is obtained from publications such as journals, textbooks, theses, dissertations, and reports from research institutions. The internet is also used as a secondary source to research general topics associated with burnout, coping and sense of coherence. Thus, an in-depth literature study is used as the basis to sustain sufficient knowledge of the main issues.

Phase 2: Empirical study

This phase consists of a quantitative empirical study and encompasses the following areas:

1.5.3 Research participants

The data is collected by means of an electronic survey from a large Engineering organisation

in South Africa. The experimental organisation remains the same as in the study by Van Jaarsveld (2004), thereby ensuring that the two studies are comparable and subsequently increasing the validity of the study. The population of this organisation comprises 3390 engineers and scientists forming the heartbeat of production and development. These employees are involved in different segments of the organisational value chain, which run from conceptualisation, design and implementation to maintenance. A sample size of N=118 or higher is regarded as adequate to ensure reliable data. The convenience sampling method is used.

The participants' informed consent is obtained by means of a consent letter and they are assured that they will remain anonymous at all times. All participants are treated with dignity, respect and there is no form of discrimination. Participants are made aware of the fact that results of the study will be shared with the management of the organisation but that no individual will be named or singled out.

1.5.4 Measuring instruments

The measuring instruments that are used in this study are the same as in the study of Van Jaarsveld (2004). The reason is that all variables within the researcher's control are kept constant in order to increase validity and reliability. The Maslach Burnout Inventory (MBI), developed by Maslach and Jackson (1981) is used to measure burnout. The Coping Orientations to the Problems Experienced (COPE) questionnaire (Carver, Scheier & Weintraub, 1989) is used to measure coping mechanisms. The Sense of Coherence questionnaire (SOC) which was developed by Antonovsky (1983) is used to measure sense of coherence. The instruments will now be discussed in more detail.

The Maslach Burnout Inventory (MBI)

The third edition of MBI by Maslach, Jackson and Leiter (1996) is used in this research. This instrument is designed to measure the three aspects of burnout which is emotional exhaustion, depersonalisation and lack of personal accomplishment.

The reliability of the subscales according to their Cronbach alphas are the following: Emotional Exhaustion 0.90; Depersonalisation 0.79; Personal accomplishment 0.71. The test-retest reliability for the subscales is as follow: frequency for Emotional Exhaustion 0.82;

frequency for Depersonalisation 0.60 and frequency for Personal accomplishment 0.80 (Maslach & Jackson, 1981). In Van Jaarsveld's (2004) study the Cronbach alphas varied from 0.85 to 0.86.

The Coping Orientations to the Problems Experienced (COPE) questionnaire

The COPE questionnaire (Carver et al., 1989) assesses the different ways the individual responds to stress and consists of 13 scales with 4 questions to each scale.

Internal consistency of the COPE scales can be derived from Cronbach alphas ranging from 0.45 for Mental Disengagement to 0.92 for Turning to Religion. Test-retest reliability was proved by the testing of two groups of students consisting respectively of 89 and 116 individuals that took the test 6 weeks apart. The correlations ranged from 0.46 to 0.86 and 0.42 to 0.89 (Carver et al., 1989). In Van Jaarsveld (2004) the alpha coefficients of the coping strategies ranged from 0.64 to 0.94 with Active Coping, Expressing Emotions, Turning to Religion and seeking Social Support being the only acceptable results at 0.84, 0.86, 0.94, 0.83 respectively.

The Sense of Coherence questionnaire (SOC)

The SOC questionnaire (Antonovsky, 1983) is used to assess sense of coherence. The SOC questionnaire assesses 3 components which are comprehensibility, manageability and meaningfulness.

Reliability and validity of the SOC showed a high level of Cronbach alpha ranging from 0.84 to 0.93 and a high degree of internal consistency (Antonovsky, 1987) and that the convergent and discriminate validity of the SOC is adequate and that it indeed covers the aspects that it was initially designed for. Furthermore Strümpfer and Wissing (1998) pulled together all studies done in South Africa and found a mean Cronbach of 0.87.

In the study done by Van Jaarsveld (2004) he found Cronbach alphas of 0.78 (Comprehensibility), 0.82 (Meaningfulness) and 0.80 (Manageability).

1.5.5 Research procedure

Further research on the topic is encouraged by the organisation. The necessary permission was obtained from senior management as well as Human Resources to administer the instruments in the organisation. A convenience sample received an electronic link to the tests as well as an email letter explaining the aim of the study and a letter of informed consent. The identity of the participants remains confidential. The participants are aware that the research results are shared with the management of the organisation.

1.5.6 Statistical analysis

Cronbach alphas are used to determine the reliability of the measuring instruments. Descriptive statistics (means and standard deviations) are used to determine the degree to which the variables exist in the sample where after the correlation between the variables is determined by means of the Pearson's correlation coefficient. Regression analysis is used to determine the degree to which coping and sense of coherence can predict burnout. A statistician at the University of South Africa is used to conduct the statistical analysis.

1.6 CHAPTER LAYOUT

The chapters of this M1 Dissertation follow that of Masters Degree Option 1 and the chapters are as follow:

Chapter 1: Scientific orientation to the research

Chapter 2: Literature review

Chapter 3: Research article

Chapter 4: Conclusions, limitations and recommendations

1.7 CHAPTER SUMMARY

In chapter 1 the scientific orientation to the research was discussed. This contained the background and motivation, the research problem, aims, the paradigm perspective, the research design and method. The chapter ended with the chapter layout.

CHAPTER 2. LITERATURE REVIEW

In exploring the existing literature the constructs of burnout, coping and sense of coherence will be conceptualised, defined and discussed. Burnout, coping and sense of coherence will be placed under the magnifying glass with regards to their history, development, characteristics and symptoms as well as how they manifest in individuals and influence their daily life and especially their work.

2.1 BURNOUT

2.1.1 History and background of burnout

Herbert Freudenberger (1974) coined the term burnout. He was a clinical psychologist who focused his research on the stress responses displayed by employees in working environments that were considered to be “alternative” such as free clinics and halfway houses. The focus of research on burnout however has since moved to the human services sector which includes police officers, lawyers, nurses, social workers and other occupations where individuals have a lot of contact with people who are in need of help (Maslach, 1982; Perlman & Hartman, 1982). According to Schaufeli and Buunk (2002) everybody can experience stress, but burnout can only be experienced by those individuals who entered their careers enthusiastically with great expectations and high goals. These individuals are usually also highly motivated. Taking this into account, work wellness, engagement and specifically burnout became a very important focus area of research and intervention in South Africa. In order to conceptualise burnout further one has to define it properly.

2.1.2 Defining burnout

There are a diverse range of definitions of burnout. Emotional exhaustion due to strenuous psychological and emotional demands accrued by helping people indicate the most common use of the term burnout (Jackson et al., 1986).

The loss of drive and spirit are associated with experiences that can be painful on emotional, physical and mental levels. Individuals who are likely to experience burnout are usually

highly motivated and are frequently exposed to situations that are emotionally demanding (Freudenberger, 1980; Maslach, 1982; Pines, 2002).

Burnout is defined by Maslach and Jackson (1984) as well as Schaufeli and Enzmann (1998) as an experience of an individual employee. It occurs when the person cannot cope with the demands of work. Prolonged stress and the inability to cope with negative conditions are additional contributors. Burnout sneaks up on individuals as their symptoms develop slowly and remain unnoticed for long periods (Cilliers, 2003). A reduced sense of effectiveness, less motivation, dysfunctional attitude and behaviour is characteristic of a burned-out individual (Schaufeli & Enzmann, 1998). Researchers in the field may have slightly different definitions of the concepts of burnout but in general they agree that it is work-related and a combination of acute, delayed and chronic stressors (Van Jaarsveld, 2004).

Job burnout and depression are closely related but not the same construct. The relationship between the construct is complex and multi-directional. Maslach (1982) found that burnout contributes to depression whilst Glass et al. (1993) found that depression can contribute to burnout. Both these constructs can also be related to some other factors in the individuals' life such as medical illness, poor self-esteem, sense of failure, conflicts in relationships, irritability, paranoia, frustration and apathy (Glass et al., 1993; Maslach, 1982; Sears, Urizar & Evns, 2000).

Maslach (1982) provides three stepping stones in understanding burnout. Firstly, it can be assumed that burnout occurs at an individual level. Secondly, burnout is emotional as it involves motivation, feelings and expectations and thirdly, burnout can be seen as a negative experience. For the purposes of this research, burnout as defined by Maslach and Jackson (1984) will be used. They are of the opinion that burnout is an individual experience that is developed by those who are subjected to work demands that they cannot cope with. Van der Ploeg, Dorresteijn and Kleber (2003) agree that occupational stress contributes to burnout. They list the following: experience of traumatising events on the job, confusion, conflict and ambiguity related to job roles (Posig & Kickul, 2003), risk and safety factors (Leiter & Robichaud, 1997), being undermined by a supervisor or believing that it has occurred (Westman & Etzion, 1999), low levels of social support (Brown & O'Brien, 1998) and inadequate job resources (Lee & Ashforth, 1996). All of the abovementioned factors may also lead to depression.

2.1.3 Dimensions of burnout

Centre to all definitions of burnout is the dimensions of emotional exhaustion, depersonalisation and lack of personal accomplishment (Van der Colff & Rothmann, 2009) as identified by Maslach (1982). Emotional exhaustion refers to a chronic state of physical and emotional depletion that result from excessive job demands and continuous stress. It is also regarded as the stress dimension of burnout. It further manifests in physical, psychological and emotional symptoms. Individuals will feel emotionally overextended and exhausted. Emotional exhaustion causes employees to distance themselves from their work because they feel that they do not have access to emotional physical resources to cope effectively (Demerouti et al., 2000). Research conducted on this first dimension indicated that exhausted employees show lower organisational commitment, lower job performance, less organisational citizenship and higher turnover intentions (Cropanzano, Rupp & Byrne, 2003). Longitudinal studies further found that exhausted employees are also more likely to be absent from work and seek employment elsewhere (Grandey, Dickter & Sin, 2004).

Depersonalisation is the second dimension of burnout and should individuals suffer from this they will feel less self-aware and not in control of their surroundings (Maslach, 1982). Depersonalisation is concerned with the fact that the employees become negative and cynical. A person will feel a lack in significance and emotionally detached. Depersonalisation can also lead to very high anxiety levels (Demerouti et al., 2000).

The third and final dimension is a lack of personal accomplishment (Maslach, 1982). Lack of personal accomplishment is associated with feelings of inadequacy and insufficiency (Demerouti et al., 2000). This dimension results in feelings of insufficiency and self-doubt. It has serious consequences for professionals as well as for their clients and institutions that they work for (Zabel, Dettmer & Zabel, 1984).

There are different opinions on the sequence that burnout develops in. Golembiewski, Munzenrider and Stevenson (1986) are of the opinion that burnout starts with feelings of depersonalisation, which leads to low personal accomplishment and, subsequently, to emotional exhaustion. Leiter and Maslach (1988) however suggest that emotional exhaustion develops first, giving rise to depersonalisation and then develops into a sense of low personal accomplishment in the workplace.

In the case of depersonalisation, emotional exhaustion as well as lack of personal accomplishment, the causes are mainly job stressors, effort-reward imbalance, lack of task variety, lack of participation in decision making as well as limited social support at work (Burnard, 2000). The development of burnout will henceforth be discussed.

2.1.4 Development of burnout

On the one hand, work gives an individual positive feelings and energy. On the other hand it creates a feeling of being trapped and is associated with anxiety and stress. Taking this ambivalence into account, it can be said that work can be a developmental factor in the employees' health or illness (Scahufeli & Bakker, 2001; Turner, Barling & Zacharatos, 2002). Because the world of work demands more than it did in the past, the type of work that people do has changed, as well as how they work and how much they attempt to accomplish in a period of time. Because the need for delivery and services fluctuates, the workforce is subjected to uncertainty or forced to work longer hours which is not always its preference (Barling, 1999). Burnout is taken to be a process that develops over a long period of time where workload has been unmanageable and there is a continuous unhealthy relationship between the employees and their work. The greater the mismatch between the employees and their work, the greater the chances are for the development of burnout. There are six domains that play a role in this relationship which is workload, control, rewards, community, fairness and values (Maslach & Leiter, 1997; Maslach, 1998).

Work overload is seen when the work goes beyond the individual's limits, when there is too little time and too much work. Lack of control tends to happen when there are, for instance, politics or very strict monitoring in the workplace and the individuals have very little to no control over their work. The same will happen should the workplace be in a chaotic state. Insufficient rewards speak to both the lack in external rewards like salary and benefits as well as internal rewards such as pride and sense of accomplishment. When a person no longer feels a positive connection or has chronic conflict with others in the workplace, that is when the forth domain comes into play which is a breakdown in the community. Unfairness occurs when there aren't proper processes and procedures for governance in place or they are not abided by. This can be a skewed pay system, unfair evaluations and also unfair promotions. When there is a mismatch between the organisation's or work requirements and the value

standards of an individual, it contributes to the mismatched relationship (Maslach & Leiter, 1997; Maslach, 1998).

According to Bakker, Demerouti, Taris and Schreurs, (2003) burnout symptoms increase when occupational demands and therefore stress are high. Emotional demand and workload demands also play a role (Vegchel, Jonge, Sonderfeldt, Dormann & Schaufeli, 2004). Various researchers found that the following factors, related to occupational stress, further contribute to burnout. They are the following: experience of traumatising events on the job (Van der Ploeg et al., 2003), confusion, conflict and ambiguity related to job roles (Posig & Kickul, 2003), risk and safety factors (Leiter & Robichaud, 1997), being undermined by a supervisor or believing that this has occurred (Westman & Etzion, 1999), low levels of social support (Brown & O'Brien, 1998) and inadequate job resources (Lee & Ashforth, 1996). All of the above mentioned may also lead to depression.

According to Freudenberger (1980) burnout development is a slow process and a chronic condition that someone may have developed over a period of weeks, up to years. Burnout is in most cases not noticeable in its initial stages as the victims are in most cases competent, self-sufficient individuals who tend to keep their weaknesses hidden. This taken into account, it is important to examine the specific symptoms associated with burnout.

2.1.5 Symptoms and diagnostic criteria of burnout

The signs and symptoms of burnout are subtle at first, but they get worse as time goes by. Diagnostic criteria can only be applied to the end state of the burnout process and Freudenberger (1980) gives us a list of clinical symptoms of burnout such as exhaustion, detachment, boredom, cynicism, impatience, heightened irritability, a sense of omnipotence. Further, the person might have a suspicion of being unappreciated, feelings of paranoia, disorientation, denial of feelings and psychosomatic symptoms.

Physical signs and symptoms of burnout include being tired and drained most of the time, lowered immunity, frequent headaches, back pain, muscle aches and change in appetite or sleeping habits. Emotional signs and symptoms of burnout are sense of failure and self-doubt, feelings of helplessness, being trapped or defeated. It further includes a loss of motivation, an increasing cynical and negative outlook on life and detachment from the world. Withdrawal

from responsibilities, isolating oneself, procrastinating, alcohol and or drug abuse, skipping work or leaving early and projecting frustrations on others are behavioural symptoms of burnout (Smith, Jaffe-Gill, Segal, & Segal, 2008). Bibeau et al. (1989) analysed the definitions of burnout and proposed subjective and objective diagnostic criteria. Firstly, the principal subjective indicator is a state of severe weariness. This is accompanied by the following three feelings:

- The individuals have a low self-esteem because they feel professionally incompetent and dissatisfied with their jobs
- Various physical symptoms without a clear origin of the experienced illness
- The individual feels negative and irritated and has difficulty concentrating

Secondly, the principal objective indicator of burnout is a significant decrease in the individual's performance at work. This usually happens over a period of several months and it can be seen in the following three areas:

- The areas of individuals to whom they provide a service experience a decrease in their work quality
- It is clear to supervisors that the employees are less effective and that there is increased absenteeism
- The individuals' colleagues can also clearly see that their colleagues have lost interest in their work

In summary, the three pillars of burnout explained by Maslach (1982) remain the best way to comprehend the concept of burnout. He describes it as an individual experience that involves motivation, feelings and expectations and it is always a negative experience. Even though there are different opinions of the sequence in which burnout develops, the centre of burnout lays the dimensions of emotional exhaustion, depersonalisation and lack of personal accomplishment (Van der Colff & Rothmann, 2009) as identified by Maslach (1982). Employees attempt to deal with the physical, emotional and behavioural symptoms of burnout and therefore coping with burnout will be discussed next.

2.2 COPING

2.2.1 History and background of coping

How people adapt to adverse circumstances has been a topic of research since the 1950's (Freudenberger, 1974). The history of research on coping can be divided into three approaches. Firstly, there was the psychodynamic tradition that spanned the late nineteenth century and early to mid twentieth century. In this approach, coping was mainly viewed as a defence mechanism and the ways individuals adjust the meaning of a stressful event. This idea led to the notion that individuals may have a preference for certain strategies when managing these stressful encounters (Dewe, O'Driscoll & Cooper, 2010). The common base between personality and coping then came into the picture and was researched extensively. This second approach finds that personality and coping are constructs that overlap but cannot be viewed as synonymous. Further exploration can be viewed as the third approach, in that it investigated how competent individuals are able to apply coping strategies. It further explores whether it is possible that earlier events may influence personality (Suls & David, 1996), as well as how personality may shape positive meanings and assist in finding benefits in stressful situations (Affleck & Tennen, 1996). Over decades, coping has been defined in different ways. In order to conceptualise coping further, these definitions will be discussed below.

2.2.2 Defining coping

Coping was firstly defined as an individual's cognitive and behavioural efforts and responses to reduce, minimise, master or tolerate both internal and external demands that the environment presents. These demands can be seen as an extreme challenge to the individual's available resources (Folkman & Lazarus, 1980; Lazarus & Folkman, 1984). Defining coping from this angle, coping should be understood as a process and must be understood within the transactional terms of context and appraisal (Lazarus, 2001). For many commentators, Lazarus's definition limits coping to intentional strategies initiated within the context of the stressful encounter (Coyne & Gottlieb, 1996; Dewe et al., 2010). The definition of Kleinke (1991) and McElpatrick et al. (2000) as well as Folkman and Lazarus (1980) are similar in that they define coping as the individual's cognitive and behavioural attempts to manage potentially harmful and stressful situations. Zeidener and Saklofske (1996) were of the opinion that defining something as coping successfully requires some interpretation of what

the person was trying to do and other concepts such as adaptation and adjustment are part of our understanding of coping. According to Snyder (1999), differences emerge when coping is considered from the point of view of the person doing the coping (the insider approach) and when other people are doing the interpretation and judging (the outsider approach).

For the purposes of this research the definition of Carver and Scheier (1999, p. 562) will be used. According to them coping can be seen as the direct response that follows a stressful experience. These experiences are coped with by the individual moving towards his goals or efforts to disengage from goals that are no longer seen as attainable. These responses can be seen as strategies of coping.

2.2.3 Coping strategies

In coping with stressors there have been several studies that identified certain strategies. A major platform for empirical research on coping with work related stressors is that of the transactional model (Lazarus, 1966; Lazarus & Folkman, 1984). This transactional model places emphasis on cognitive appraisal as the core component of coping. Within the model there are two dimensions of appraisal, the first (primary appraisal) being an assessment by the individual of whether an event, person or object presents a potential threat to their well-being and the second (secondary appraisal) is the evaluation of the resources available to them to deal with the threat, and then the possible course of action that is to be taken (Dewe et al., 2010).

There is a distinct difference between coping strategies and coping styles. Strategies refer to the behaviours directed towards specific stressors. This can, for example, be the attempt to manage work demands by using time management techniques or delegating work to others. Coping styles on the other side refer to the relatively consistent habitual ways of dealing with stressors in general. This can be, for example, by confronting them head on, using a problem-focused coping style to change the situation. Other people may prefer to use emotion-focused coping which is focused on changing the individual's perceptions, cognitions and emotions towards the stressor. Individuals generally display different coping styles but strategies may also vary depending on the nature of the specific stressor and that one isn't necessarily more effective than the other but may merely be more effective within certain circumstances (Dewe et al., 2010).

Problem focused coping is believed to be more effective in a situation which is controllable to a certain extent. Appraisal is the conscious evaluation of whether a challenge is threatening or involves harm or loss. Should the individual be required to cope with the situation, the person will develop the urge to solve the problem (Problem Focused coping) (Lazarus & Folkman, 1984). If a situation may result in harm or loss it will most likely evoke palliative coping, which will involve attempts to decrease the negative emotions that are brought on by the stressor. In the cognitive model, adaptation and appraisal show the conscious process where the individual decides how to deal with the situation based on prior experience (Lazarus & Folkman, 1984). Emotion-focused coping comes to play when an individual cannot control the situation. The controlling of emotions is likely to help the individual manage the problem. It is also true however that solving the problem is one of the best ways to control emotions associated with it (Aldwin, 2007). Thus a combination will also be effective in certain situations which are to some extent controllable and to another extent less controllable (Dewe et al., 2010).

A tripartite approach to conceptualising coping strategies was introduced by Billings and Moos (1981, 1984). This approach looks at active cognitive coping (adopting a positive outlook on the situation; thinking about alternative courses of action), active behavioural coping (consulting with other people about how to handle the situation; trying to find out more about the situation; taking positive steps to address the problem) and avoidance coping (ignoring the situation; deflecting attention to other issues; engaging in distracting activities). If one however looks closer, the first two are in actual fact mere variations of problem-focused coping, with the third being a form of emotion-focused coping.

The COPE psychometric measurement developed by Carver et al., (1989) also measures problem-focused coping and emotional-focused coping, but describes it as follow:

- Active coping: planning, acting on the stressor
- Avoidance coping: as described above but also including mental disengagement
- Support: seeking instrumental or socio-emotional support
- Positive cognitive restructuring: positive reinterpretation of meaning of the situation; using humour; acceptance of the situation

Proactive coping is another more recent strategy that has received attention. This coping strategy will typically involve efforts from the individual to prevent a stressful event, or at

least modify it before it happens (Aspinwall & Taylor, 1997). This coping strategy will in most cases be active rather than passive attempts. Skinner, Edge, Altman and Sherwood, (2003) conducted an extensive study and identified 100 different measures of coping behaviours and included about 400 different coping behaviours. They suggested a hierarchical approach to coping that consists of 13 higher order categories of coping behaviour. They are the following: problem-solving, support-seeking, escape, distraction, cognitive restructuring, rumination, helplessness, social withdrawal, emotional regulation, information seeking, negotiation, opposition and delegation. Non-avoidant coping strategies are considered effective in the long run whilst avoidant strategies are seen as an effective short term solution (Suls & Fletcher, 1985). Even though we can agree that from the discussion above it is clear that there is no uniform definition and categorisation of coping strategies, one can however look at definite stages that can be associated with the development of coping.

2.2.4 Development of coping

The development of coping strategies can be divided into different developmental stages of a person's lifespan (Malan & Rothmann, 2004). In early years, studies on the development of coping have mainly examined defensive mechanisms and coping strategies. Research has, however, moved to coping and adaptive strategies and emotion regulation during adulthood (Carstensen, Mikels & Mather, 2006).

The development of young adults is a stressful time. Young adults report higher levels of stressful life events than middle-aged or older adults (Almeida & Horn, 2004). These events include finding and starting a career, getting married, having children and losing jobs. Studies have shown that there is an increase in emotion regulation of emotional maturity that occurs in early adulthood. This development of emotional maturity means the ability to regulate internal and external expression of emotion and to develop the ability to judge action as well as to judge the motivation of others. Emotionally mature individuals may have the ability to judge situations to be less stressful have the ability to utilise resources more effectively and thus may have better outcomes from their coping strategies (Aldwin, 2007).

Individuals who find themselves in their mid-life have stressors of their own in that they have to deal with work responsibility, continuous up skilling and adolescent children. However it

is found that these individuals still have less to cope with than young adults. Aldwin, Shiraishi and Levenson (2002) disagree with this finding to a certain extent, in that they found that stress resulted in increased acute symptoms in early adulthood but chronic illness becomes a problem in mid-life. Individuals in their mid-life are, however, seen to be at the height of their coping abilities. They use more problem-focused coping strategies than any other developmental stage and they are also highest in the application of their practical knowledge (Baltes & Staudinger, 2000). In addition to this Kelly (2006) found that middle-aged adults report higher levels of proactive coping, suggesting that they, in some cases, have the ability to minimise stressors.

Coping is the direct response that follows a stressful experience (Carver & Scheier, 1999, p. 562). Individuals cope with stress by moving towards their goals and leave the goals behind that can no longer be attained. One has to distinguish however between coping strategies (cognitive, active behavioural- and avoidance coping) which are mentioned above, as well as emotional and problem-focused coping styles that consist of habitual ways of dealing with stress (Dewe et al., 2010). It can be said that when individuals are able to regulate internal and external expression of emotion and to develop the ability to judge action as well as to judge the motivation of others, they are emotionally mature and can actively deal with the demands and life-stressors and therefore have better outcomes from their coping strategies (Aldwin, 2007). The ability to regulate internal and external influences in one's life relates directly to a high sense of coherence and therefore this construct will be explored next.

2.3 SENSE OF COHERENCE

2.3.1 History and background of sense of coherence

Sense of coherence (SOC) originated from Antonovsky's (1987) interest in salutogenesis. Salutogenesis refers to promoting health when one is severely stressed instead of being self-destructive. The paradigm of salutogenesis is in direct contrast to that of the traditional pathogenic paradigm (Strümpfer, 1990). The salutogenic paradigm focuses on the individual's ability to be resilient under unhealthy and stressful circumstances. Positive, optimum conditions of psychological health are core to this paradigm. In other words, the strength not to fall ill when confronted with stress and tension (Herbst, Coetzee & Visser, 2007). It views stress as a manageable, dynamic process that produces positive and effective

functioning which results in coping with ones environment. Sense of coherence is one of the primary constructs within the paradigm of salutogenesis (Antonovsky, 1979). Antonovsky did remarkable research on the survivors of the Six Day War and the characteristics of the survivors that can be related to sense of coherence. He found that tentative explanations for the adaptation of concentration camp survivors were the initial underlying strength; a subsequent environment that provided opportunities to re-establish a satisfying and meaningful existence and finally a hardiness that allowed survivors to view current stressors with some degree of equanimity (Dorland, 2009).

2.3.2 Defining sense of coherence

Antonovsky (1979) defined SOC as a global orientation that expresses the degree that an individual has pervasive, persistent and dynamic feelings of confidence that one's internal and external environments are predictable and that there is a good chance that all will work out as can be reasonably expected. He further described it as a reflection of the utility of one's life in the form of internal resources, and that it will mirror adaptive coping with difficult and uncertain events in life. He is also of the opinion that SOC is a salutary resource rather than a coping strategy (Antonovsky, 1987).

Antonovsky (1987, p. 19) defines it more broadly in the following way:

Sense of coherence is a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable; (2) the resources are available to one to meet the demands posed by these stimuli; and (3) these demands are challenges, worthy of investment and engagement.

SOC is defined by Löyttyniemi, Virtanen and Rantalaiho (2004) as the individual's relatively stable, though not static, way of making sense of, or relating to the world.

To ultimately define SOC in this research, it will be seen as a personal way of thinking, being and acting with an inner trust that leads people to identify, benefit, use and re-use the resources that they have (Eriksson & Lindström, 2005). Sense of coherence is seen as a way individuals attempt to make sense of their world and it consists of three dimensions, namely comprehensibility, manageability and meaningfulness.

2.3.3 Dimensions of sense of coherence

Comprehensibility is the extent to which individuals are likely to perceive stressors as predictable and explainable. High comprehensibility indicates that individuals experience that life in general makes sense, in that they perceive it as ordered, structured and clear, rather than chaotic, disordered, random, accidental and unpredictable. When comprehensibility is low it shows that a person experiences life as unpredictable and chaotic (Antonovsky, 1984; Sullivan, 1993). Strümpfer (1995) refers specifically to an individual's ability to make sense of stimuli from the internal and external environment which is driven by a high level of comprehensibility.

Manageability is the extent which individuals have confidence in their capacity to overcome the stressors or deal with demands that are imposed by stimuli. In extreme circumstances, individuals will feel that the situation is manageable and that they have the resources to deal with the situation as well as the consequences of it. These resources can vary from resources within the individual to resources controlled by others which the individual considers to be trustworthy (Strümpfer, 1995). Helplessness is a common experience associated with low manageability. Life in general will not be experienced as unmanageable or overwhelming if a person has a strong sense of coherence (Antonovsky, 1984; Sullivan, 1993).

The ability to judge if a challenge is worthwhile is coupled to meaningfulness. Seeing life as valuable to commit to is indicated by a high sense of meaningfulness. When life is experienced as a burden, it is a danger sign for a low sense of meaningfulness (Antonovsky, 1984). It can simply be stated that such individuals will feel in charge of their own destiny and that life will make sense on an emotional and cognitive level (Sullivan, 1993). Individuals who can couple a challenge or stressor with meaningfulness will consider them to be welcome and worth investing energy in. An engineer with a stressful routine will, for example, seek meaning and believe that he will succeed with dignity.

A strong sense of coherence in general suggests that a person is able to cope successfully with stressors, thereby increasing resilience and displaying the characteristics of pervasiveness, and has the ability to endure, the feeling of confidence that one's internal and external environments are predictable and that there is a high probability that things will work out well at the end of the day. The idea of salutogenesis promotes the fact that a strong sense

of coherence is essential for successful coping with stressors and ensuring that a person stays healthy (Antonovsky, 1979, 1987).

Antonovsky (1987) established that the conditions of a strong sense of coherence are generalised resistance resources. These resources will be subsequently discussed in the development of a sense of coherence.

2.3.4 Development of sense of coherence

Generalised Resistance Resources (GRR's) are an important concept within Antonovsky's (1987) research. This was also further researched by Eriksson (2007). GRR's provide life experiences that promote the development and maintenance of a strong sense of coherence (Antonovsky, 1987). Strümpfer (1990) describes the different types of GRR's as follow: physical and biochemical GRR's (immunosuppressors and potentiators, wealth, clothing, healthcare, power, status and services); cognitive GRR's (knowledge, skills, intelligence) emotional GRR's (ego identity); coping strategies and interpersonal GRR's (social support and commitment). In the application of the GRR's there will be further development and maintenance of a strong sense of coherence and well-being (Antonovsky, 1987).

According to Eriksson (2007) the main factor is not what resources are available, but the ability to identify, as well as use and re-use them for the intended purposes. The GRR's provide a person with sets of meaningful and coherent life experiences. A person with a strong sense of coherence will have the ability to use these GRR's to help him cope effectively (Eriksson & Lindström, 2005; Nielson & Hansson, 2007).

SOC remains more stable following maturation and should be fully developed after young adolescence (Antonovsky, 1984, 1987). It is important to identify the role of SOC for an adolescent's emotional health (Moksness, Espnes & Lillefjell, 2012). The age of 30 is a critical point in this process; around this age the individual should be able to cope with and manage change. Eriksson (2007) found that the development of SOC is a lifelong process which is likely to vary during the adolescent period because there are developmental shifts and challenges in this period. Social support and a home environment with child-centred parenting in childhood and adolescence are central in the development of SOC (Marsh, Clinkenbeard, Thomas & Evans, 2007).

Research results showed that boys score higher on SOC than girls across all age groups, but especially in the ages between 15 and 16 years (Moksness et al., 2011). Another study by Simonsson, Nilsson, Leppert and Diwan (2008) found that adolescents with weak SOC scores had a 10-15 times increased risk of psychosomatic complaints compared with adolescents with a strong SOC. It is also important to provide adolescents with sufficient support and to supply them with personal tools to make their journey through adolescence a positive and growth-oriented experience.

The first years of employment are also important in the development of SOC. When individuals are at work they will most likely have feelings of security and this will help provide a basis for comprehensibility, a good load-balance of manageability, and if these individuals feel that they have influence over their work and life and it will contribute to meaningfulness (Antonovsky, 1987, 1991; Feldt, 1999). Other aspects in the stabilisation of SOC take place through unique life events and in a cultural and historical context, that include social and economic factors such as studying, earning money, providing for a family and the development of relationships with colleagues (Loyttyniemi et al., 2004).

The conclusion can be made that difficulties in entering the labour market, poor employment prospects, unemployment experiences and job stress will shape the social and economic reality of young adults in ways that will negatively influence their perceptions of a predictable, non-chaotic existence and affect negatively the development and stabilisation of their SOC (Antonovsky, 1987; Rothmann, Jackson & Kruger, 2003). Research further found that a stable working environment, well-rounded education and being respected for their occupation enhances SOC (Kalimo & Vuori, 1990) and on the flip side of the coin, that unemployment and job insecurity have a negative effect, especially for professionals that are proud of and committed to their work. It is not only the lack of work that negatively influences the SOC but also the lack of social valuation (Kaufman, 1982; Loyttyniemi et al., 2004). According to Strümpfer (1992) SOC relates directly to the different aspects of effective performance at work, career effectiveness and successful living. Individuals with a strong SOC will, over a period of time, experience shorter periods of tension and stress and go further toward the salutary health end of the health ease/dis-ease scale (Simonsson et al., 2008). There are also certain indicators that can be identified in an individual who indeed has succeeded in developing a strong sense of coherence.

2.3.5 Indicators of sense of coherence

According to Strümpfer (1990) an organisational environment that consists of a group of individuals with a strong sense of coherence will experience high performance levels, recognition, reward and promotion. These persons will be characterised by the following (p. 270):

- Making cognitive sense of the workplace, perceiving its stimulation as clear, ordered, structured, consistent and predictable information
- Perceiving their work as consisting of experiences that are bearable, with which they can cope and as challenges that they can meet by availing themselves of personal recourses or resources under the control of legitimate others
- Making emotional and motivational sense of work demands; seeing them as welcome challenges, worthy of engaging in and investing their energies in

According to Strümpfer (1992), SOC is directly related to different aspects that can be associated with successful living, high performance levels at work and career effectiveness. It can be assumed that the stronger the sense of coherence, the better the individuals chances are to ultimately use cognitive, affective and instrumental strategies to cope and, in the end, improve their wellbeing. These people will, for example, not put off asking for help, they will look after themselves health wise and comply with the professional guidance of organisational mentors.

Coping with a strong sense of coherence can be broken down into stages (Antonovsky, 1979, 1987, 1990, 1992). The first stage is appraisal. In this phase the individuals will define the stimulus as a stressor. Should they have a strong sense of coherence, they will most likely in the second stage identify the stressor as manageable. They will be confident that they have resources and support to handle the challenge successfully. Salutary emotions will then be present within the individuals. The third stage of appraisal will be the definition of the problem. A person with a strong sense of coherence is willing and cognitively as well as emotionally capable of confronting the problem head on. The final stage can be seen as reappraisal where individuals are not afraid to ask for feedback or work through negative criticism.

Employees have to make sense of their world and they do this by developing a way of thinking, being and acting with an inner trust that leads people to identify, benefit, use and re-use the resources that they have (Eriksson & Lindström, 2005). They do this by applying a sense of coherence. The key to understanding sense of coherence is the three dimensions of comprehensibility, manageability and meaningfulness. These dimensions, in combination with the GRR's researched by Eriksson (2007) will promote the development and maintenance of a strong sense of coherence and it will be indicated by cognitive sense of stimulations, as well as work being perceived as a manageable challenge. The above will be done in the three stages of appraisal, identifying the stressor as manageable and lastly defining the problem (Antonovsky, 1979, 1987, 1990, 1992).

2.4 INTEGRATION OF CONSTRUCTS

Various studies have been conducted with burnout (measured by the MBI questionnaire), coping (measured by the COPE questionnaire) and sense of coherence (measured by SOC questionnaires) as constructs (e.g. Herbert, 2004; Lingard, 2003; Rothman, 2004; Rothman, Steyn & Mostert, 2005; Van der Colff & Rothman, 2009; Van Jaarsveld, 2004; Yip & Rowlinson, 2009). The most significant one related to this particular study was that of Van Jaarsveld (2004). It was clear in his study that a strong relationship does exist between the components of MBI, COPE and SOC.

The study found that burnout symptoms are present when the individual has a weak sense of coherence and is not able to apply the relevant coping strategies to remove or avoid the sources of stress. The results of the studies by Lingard (2003) and Yip and Rowlinson (2009) had a similar outcome, in that they both proved that individuals who are not able to find relevant coping strategies to deal with their stressors and have a low sense of coherence are more likely to suffer from burnout.

In a study conducted by Herbert (2004) on the specific dimensions of burnout and coping strategies, it was found that effective coping strategies lower the representation of Depersonalisation, whilst avoidance coping is a better predictor of Depersonalisation than approach coping. The roles are, however, reversed regarding the Emotional Exhaustion component, as avoidance coping is a better predictor in this case than approach coping. It was further found that Friend Support was positively related to the component of Personal

Accomplishment as well as to three of the other approach coping responses; logical analysis, positive reappraisal, and problem solving. Furthermore, it was found that there were no significant differences found between the position of the individual within the organisation and the level of burnout that is experienced.

National studies support the international findings of Lingard (2003); Yip and Rowlinson (2009) in that a study by Rothmann (2004) indicated that low professional efficacy was associated with low scores on psychological strengths and they were related to constructive coping strategies such as problem-solving and positive reinterpretation. A study by Rothmann et al., (2005) confirmed that job stress, job demands and a lack of support lead to burnout. It further showed that a strong sense of coherence indeed mediates the relationship between job stress and work wellness (consisting of low burnout and high work engagement) (Rothmann et al., 2005). In a subsequent study, a weak sense of coherence, focus on, and ventilation of emotions, as coping strategy, resulted in a depletion of emotional resources and feelings of depersonalisation. On the other hand, employees who had a strong sense of coherence and utilised approach coping strategies were more engaged (Van der Colff & Rothmann, 2009). The conclusion can be made that employees who display active and approach coping strategies, effective problem solving skills and reinterpretation will be able to manage stress, support their own work-wellness and in the end not be likely to suffer from burnout.

The constructs of burnout, coping and sense of coherence are thus interlinked and have a specific influence on each other. Burnout is a result of the complex interaction of individual characteristics, work environment and the inability to successfully cope with the aforementioned. On the other hand, it can be said that the stronger the sense of coherence, the better a person will be able to identify the nature of the stressor that he is confronted with and select the sufficient coping strategy. Individuals with a strong sense of coherence have the ability to evaluate the nature of the stressor and to apply the appropriate coping mechanism to deal with the stressor or to avoid it.

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

Hypothesis 1

There is a significant negative relationship between low burnout on the one hand and a high sense of coherence and effective coping strategies on the other hand.

Hypothesis 2: Coping and sense of coherence can be used as predictors of burnout.

2.5 CHAPTER SUMMARY

Chapter 2 provided the theoretical framework of burnout, coping and sense of coherence. Applicable definitions and detail on the development of symptoms of these constructs were provided. An integration of these constructs as well as the international and national research that has been conducted was discussed. Lastly the literature review was brought closer to the specific target group in that the applicability of the constructs was discussed in terms of engineers and scientists.

CHAPTER 3. ARTICLE

BURNOUT, COPING AND SENSE OF COHERENCE IN AN ENGINEERING ORGANISATION

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Abstract: The objective of the study was to investigate the relationship between burnout, coping and sense of coherence in an Engineering organisation. A cross-sectional survey design was used. The convenience sample consisted of 118 engineers and scientists on various levels in the organisation. The Maslach Burnout Inventory, Coping Orientations to the Problems Experienced and Sense of Coherence questionnaires were administered for this quantitative study. The results showed that focus and venting of emotions as well as SOC are predictors of emotional exhaustion and cynicism. SOC also proved to be a predictor of professional efficacy. This research supported the result in various other studies. It proved that burnout, sense of coherence and coping are strongly related and that sense of coherence and focus and venting of emotions can predict the levels of burnout that an individual might experience.

Key words: Salutogenesis; Occupational Stress; Efficacy; Meaningfulness, Depersonalisation

INTRODUCTION

The world of today is constantly changing on the technological, economic, and demographic fronts (Rasool & Botha, 2011). These changes have a substantial effect on the labour in our organisations. Employees in the workplace are faced with many challenges such as continuous training, the looming risk of unemployment and having to navigate the many global career challenges (Coetzee & Gunz, 2012). These challenges include career creation and sustaining that career in a world with decreased employment opportunities, diminished job security, fast-paced technology and increasing personal responsibility of up skilling, employability, job satisfaction and lifelong learning (Marock, 2008; Pool & Sewell, 2007).

The South African career environment has additional adverse factors such as the legacy of apartheid, skill shortages, and the pressure of employment equity (Department of Labour, 2009; Pauw, Oosthuizen & Van der Westhuizen, 2008). Rasool and Botha (2011) found that the skill shortage currently the order of the day severely affects socioeconomic growth and development in South Africa.

It is necessary to address the effects of these changes and the stress that it causes from not only an organisational, social or economic perspective, but also from a psychological one (Pines, 2002). One of the key considerations in the organisation of today is burnout. The prevalence of burnout in the workforce is not only painful to the individual, but also costly to the organisation and society at large. Burnout severely affects the work and personal wellbeing of an individual (Cropanzano & Wright, 2001). Maslach and Leiter (1997) even went as far as to state that it erodes the soul. It can leave an employee with depleted energy levels, feelings of lack of control, helplessness, low motivational levels, being negative towards work, self and others, as well as emotionally exhausted. The organisation, on the other hand, suffers due to high absenteeism and turnover, performance deficits and substance abuse (Du Plooy & Roodt, 2010; Glass, McKnight & Valdimarsdottir, 1993).

Burnout is caused by the inability to effectively cope with stress and, as burnout is a possibility in all occupations, it is important for an organisation and individuals to learn more about effective coping strategies (Evans & Fisher, 1993; Isaksson et al., 2010; Rothmann, 2008). In research conducted by Strümpfer (2003) it is proposed that the thinking surrounding burnout, which is a pathogenic construct, should shift to a fortigenic direction. The salutogenic view (meaning the origin of health) preceded the fortigenic direction (the origin of strengths). Antonovsky (1979) introduced the salutogenic paradigm which shifts the focus from what is wrong with an individual rather to what makes an individual well.

According to Antonovsky (1987) an individual who is able to cope effectively is likely to have a strong sense of coherence and therefore the ability to select a particular coping strategy that seems most appropriate to the given situation that might cause burnout. Coping, on the other hand, can be seen as the response to a stressful experience. Individuals will cope with these experiences by focussing on their goals that are attainable (Carver & Scheier, 1999, p.562). It appears that in order to successfully address burnout, one has to look at the influence that coping strategies and sense of coherence can have on burnout.

Burnout can occur in any occupation especially those that are in an above-average risk group regarding work stress (Demerouti, Bakker, Nachreiner & Schaufeli, 2000; Levert, Lucas & Ortlepp, 2000). Burnout is therefore a reality of our modern world and no organisation can afford to have employees suffering from emotional exhaustion, depersonalisation and lack of personal accomplishment (Van der Colff & Rothmann, 2009). Very little research could, however, be found on the phenomena in the specific occupations of engineers and scientists. The prevalence of unrealistic job expectations, unmet organisational expectations (Jackson, Schuler & Schwab, 1986) chronic daily stresses, critical life events (Etzion, 1984) and a gradual disillusionment in a search to receive a sense of existential meaning out of one's everyday work are known and well researched causes of burnout. Engineers and scientists are in occupations that are very challenging, require a lot of responsibility and are usually occupied by above average intelligence, ambitious individuals (Johnson, 2006). Engineers also have to cope with the daily demands that arise from the nature of their work as well as deal with the increased pressure to perform. These demands that engineers are subjected to can cause exhaustion due to the combination of personal stressors, job and organisational stressors (Kreitner & Kinicki, 1998).

According to Schaufeli and Buunk (2002) everybody can experience stress, but burnout can only be experienced by those individuals who entered their careers enthusiastically with great expectations and high goals. Taking this into account, engineers and scientists can very likely be victims of burnout. The results of this study could be used to equip employees with the necessary coping strategies and enhance their sense of coherence in order to manage the degree of burnout in the organisation. The aim of this research was to investigate the relationship between burnout, coping and sense of coherence amongst engineers and scientists within a large engineering company in South Africa.

Burnout

Herbert Freudenberger (1974) coined the term burnout. His research was focused on the stress responses displayed by employees in working environments that are considered to be 'alternative' such as free clinics and halfway houses. The focus of research has however since moved to the human services sector, which includes police officers, lawyers, nurses, social workers and other occupations where individuals have a lot of contact with people who are in need of help (Maslach, 1982; Perlman & Hartman, 1982).

There is a diverse range of definitions of burnout. Centre to all definitions of burnout are the dimensions of emotional exhaustion, depersonalisation and lack of personal accomplishment (Maslach et al., 1996; Van der Colff & Rothmann, 2009). Emotional exhaustion refers to a chronic state of physical and emotional depletion that result from excessive job demands and continuous stress. It further manifests in physical, psychological and emotional symptoms (Cropanzano, Rupp & Byrne, 2003). Depersonalisation, which is the second dimension, makes a person feel less self-aware and not in control of his surroundings (Maslach, 1982). A person will feel a lack of significance and be emotionally detached. It can also lead to very high anxiety levels. The third dimension is lack of personal accomplishment. This dimension results in feelings of insufficiency and self-doubt. It has serious consequences for professionals, as well as for their clients and the institutions that they work for (Zabel, Dettmer & Zabel, 1984).

Golembiewski, Munzenrider and Stevenson (1986) are of the opinion that burnout starts with feelings of depersonalisation, which leads to low personal accomplishment and subsequently, to emotional exhaustion. The signs and symptoms of burnout are subtle at first, but they get worse as time goes on. Smith, Jaffe-Gill, Segal and Segal (2008) identified physical (tiredness, lowered immunity, frequent headaches), emotional (loss of motivation, detachment) and behavioural symptoms (substance abuse, isolating oneself) of burnout.

Coping

How people adapt to adverse circumstances has been a topic of research since the 1950s (Freudenberger, 1974). This adaptation can be seen as coping and was more clearly defined by Carver and Scheier (1999, p. 562). According to them coping can be seen as the direct response that follows a stressful experience. There is a distinct difference between coping strategies and coping styles. Strategies refer to the behaviours directed towards specific stressors. Coping styles on the other hand refer to the relatively consistent habitual ways of dealing with stressors in general (Dewe, O'Driscoll & Cooper, 2010).

Individuals cope with stress by moving towards their goals and leave the goals behind that can no longer be attained. One also has to distinguish between coping strategies (cognitive, active behavioural- and avoidance coping) as well as emotional and problem-focused coping styles that consist of habitual ways of dealing with stress (Dewe et al., 2010). It can be said that when individuals are able to regulate internal and external expression of emotion and

develop the ability to judge action as well as to judge the motivation of others, they are emotionally mature and can actively deal with the demands and life-stressors and therefore have better outcomes from their coping strategies (Aldwin, 2007).

Problem focused coping is believed to be more effective in a situation which is controllable to a certain extent (Lazarus & Folkman, 1984). Emotion-focused coping, on the other hand, comes into play when an individual cannot control the situation. The controlling of emotions is likely to help the individual manage the problem (Aldwin, 2007). Thus a combination will also be effective in certain situations which are to some extent controllable and to another extent less controllable (Dewe et al., 2010). The ability to regulate internal and external influences in one's life relates directly to a high sense of coherence and therefore this construct will be explored next.

Sense of coherence

Sense of coherence (SOC) originated from Antonovsky's (1987) interest in salutogenesis. Salutogenesis refers to promoting health when one is severely stressed, instead of being self-destructive. The paradigm of salutogenesis is in direct contrast to that of the traditional pathogenic paradigm (Strümpfer, 1990). Sense of coherence is seen as a way individuals attempt to make sense of their world and it consists of three dimensions, namely Comprehensibility, Manageability and Meaningfulness. Comprehensibility is the extent to which individuals are likely to perceive stressors as predictable and explainable (Antonovsky, 1984; Sullivan, 1993). Manageability is the extent which individuals have confidence in their capacity to overcome the stressors or deal with demands that are imposed by stimuli (Antonovsky, 1984; Strümpfer, 1995; Sullivan, 1993). Seeing life as valuable to commit to is indicated by a high sense of meaningfulness (Sullivan, 1993).

Generalised Resistance Resources (GRRs) are an important concept within Antonovsky's (1987) research and it was also further researched by Eriksson (2007). GRRs provide life experiences that promote the development and maintenance of a strong sense of coherence (Antonovsky, 1987). Strümpfer (1990) describes the different types of GRRs as follow: physical and biochemical GRRs (immunosuppressors and potentiators, wealth, clothing, healthcare, power, status and services); cognitive GRRs (knowledge, skills, intelligence,) emotional GRRs (ego identity); coping strategies and interpersonal GRRs (social support and

commitment). In the application of the GRRs there will be further development and maintenance of strong sense of coherence and well-being (Antonovsky, 1987).

Burnout, coping and sense of coherence

Various studies have been conducted with burnout (measured by the MBI questionnaire), coping (measured by the COPE questionnaire) and sense of coherence (measured by the SOC questionnaire) as constructs. The most significant one related to this particular study was that of Van Jaarsveld (2004). It was clear in his study that a strong relationship does exist between the components of MBI, COPE and SOC.

The study found that burnout symptoms are present when the individual has a weak sense of coherence and is not able to apply the relevant coping strategies to remove or avoid the sources of stress. The results of the studies by Lingard (2003) and Yip and Rowlinson (2009) had a similar outcome in that they both proved that individuals who are not able to find relevant coping strategies to deal with their stressors and have a low sense of coherence are more likely to suffer from burnout.

In a study conducted by Herbert (2004) on the specific dimensions of burnout and coping strategies, it was found that effective coping strategies lower the representation of Depersonalisation, whilst avoidance coping is a better predictor of Depersonalisation than approach coping. The roles are, however, reversed regarding the Emotional Exhaustion component, as avoidance coping is a better predictor in this case than approach coping. It was further found that Friend support was positively related to the component of Personal Accomplishment, as well as three of the other approach coping responses; logical analysis, positive reappraisal, and problem solving. Furthermore, it was found that there were no significant differences found between the position of the individual within the organisation and the level of Burnout that is experienced.

National studies support the international findings of Lingard (2003) as well as Yip and Rowlinson (2009) in that a study by Rothmann (2004) indicated that low professional efficacy was associated with low scores on psychological strengths and they were related to constructive coping strategies such as problem-solving and positive reinterpretation. A study by Rothmann, Steyn and Mostert (2005) confirmed that job stress, job demands and a lack of support led to burnout. It further showed that a strong sense of coherence indeed mediates the

relationship between job stress and work wellness (consisting of low burnout and high work engagement) (Rothmann et al., 2005). In a subsequent study, a weak sense of coherence, focus on and ventilation of emotions, as coping strategy, resulted in a depletion of emotional resources and feelings of depersonalisation. On the other hand, employees who had a strong sense of coherence and utilised approach coping strategies were more engaged (Van der Colff & Rothmann, 2009). The conclusion can be made that employees who display active and approach coping strategies, effective problem solving skills and reinterpretation will be able to manage stress, support their own work-wellness and in the end not be likely to suffer from burnout.

The constructs of burnout, coping and sense of coherence are thus interlinked and have a specific influence on each other. Burnout is a result of the complex interaction of individual characteristics, work environment and the inability to successfully cope with the aforementioned. On the other hand it can be said that the stronger the sense of coherence, the better a person will be able to identify the nature of the stressor that he is confronted with and select the sufficient coping strategy. Individuals with a strong sense of coherence have the ability to evaluate the nature of the stressor and to apply the appropriate coping mechanism to deal with the stressor or to avoid it.

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

Hypothesis 1

There is a significant negative relationship between low burnout on the one hand and a high sense of coherence and effective coping strategies on the other hand.

Hypothesis 2: Coping and sense of coherence predicts burnout.

RESEARCH DESIGN

Research approach

The objective of this quantitative research was descriptive in nature and the study was conducted to determine coping and sense of coherence's relationship with burnout amongst engineers and scientists. The aim of descriptive research is to attempt to describe certain phenomena and relationships between phenomena in already defined subject-related

paradigms (Mouton & Marais, 1992). This specific research approach therefore answered the research questions and fulfilled the aims of this study. A cross-sectional survey design was used to achieve the objectives of this survey (Shaughnessy & Zechmeister, 1997).

Research method

Research participants

The convenience sampling method was used. The population of the organisation comprises of 3390 engineers and scientists. 1276 questionnaires were sent out. A sample of $n = 118$ returned the completed questionnaires. The participant's informed consent was obtained by means of a consent letter and they were assured that they would remain anonymous at all times. All participants were treated with dignity, respect and there was no form of discrimination. Participants were made aware of the fact that results of the study will be shared with the management of the organisation, but that no individual will be named or singled out. Descriptive information on the sample of engineers and scientists is presented in Table 1.

TABLE 1

Characteristics of Participants in the sample

Item	Category	Percentage	Frequency
Designation	Chemical Engineers	5.1	6
	Civil Engineer	1.7	2
	Mechanical Engineer	3.4	4
	Process Engineer	26.3	31
	Project management	10.2	12
	Engineering other	31.4	37
	Scientist	22.2	26
Level	Level 7	15.3	18
	Level 6	22.9	27
	Level 5	39	47
	Level 4	18.6	22
	Level 3	1.7	2
	Level 2	0.8	1
	Other	0.8	1
Qualification	Degree	66.9	78
	Postgraduate degree	25.4	30
	Other (diploma, etc.)	6.9	8
Age	20-25 years	22.9	27
	26-30 years	35.6	42
	31-35 years	8.5	10
	36-40 years	7.6	9

	41-45 years	6.8	8
	46-50 years	3.4	4
	51-55 years	10.2	12
	56-60 years	5.1	6
Marital status	Single	30.5	2
	Married	60.2	9
	Divorced	1.7	71
	Engaged	7.6	36
Language	English	40.7	48
	Afrikaans	55.1	65
	African	3.4	4
	Other	0.8	1
Gender	Male	64.6	76
	Female	35.6	42
Alcoholic drinks/week	0-4 units	62.7	74
	5-7 units	13.6	16
	8-14 units	3.4	4
	15 or more	0.8	1
	Do not use alcohol	19.5	23
Smoking	Yes	12.7	15
	No	87.3	103

The biographical questionnaire assisted in obtaining personal information about the participants. The sample group mainly consisted of process engineers (26.3%), scientists (22.2%) and the group who regarded themselves as engineering “other” (31.4%) which includes systems, network or industrial engineers. Chemical (5.1%), mechanical (3.4%) and civil engineers (1.7%) were less represented. The majority of the participants were from middle management (Level 5 - 39%) and participation took off in relation to seniority. Most of the participants have a degree (66.9%) and a quarter of the group had post graduate qualifications (25.4%). More than half of the engineering population (60.2%) were married and between 20 to 30 years of age. Afrikaans (55.1%) was the most common language with English speaking participants represented at 40.7%. Most of the participants were male (64.4%) and 62.7% of the participants reported consuming zero to four units of alcohol per week. Nearly all the participants were non smokers (87.3%).

Measuring instruments

The third edition of the *Maslach Burnout Inventory* (MBI) by Maslach, Jackson and Leiter (1996) was used in this research to measure burnout. This instrument is designed to measure the three aspects of burnout which are emotional exhaustion, depersonalisation and lack of

personal accomplishment. The reliability of the subscales according to their Cronbach alphas are the following: Emotional Exhaustion 0.90; Depersonalisation 0.79; Personal accomplishment 0.71. The test-retest reliability for the subscales is as follows: Emotional Exhaustion 0.82; Depersonalisation 0.60 and Personal accomplishment 0.80 (Maslach & Jackson, 1981). In Van Jaarsveld's (2004) study the Cronbach alphas varied from 0.85 to 0.86.

The Coping Orientations to the Problems Experienced (COPE) questionnaire (Carver, Scheier & Weintraub, 1989) is a 53-item questionnaire that assesses the different ways the individual copes with stress and consists of 13 scales with 4 questions to each scale. Internal consistency of the COPE scales as measured by Cronbach alphas ranged from 0.45 for Mental Disengagement to 0.92 for Turning to Religion. Test-retest reliability was proved by the testing of two groups of students consisting respectively of 89 and 116 individuals that took the test 6 weeks apart. The correlations ranged from 0.46 to 0.86 and 0.42 to 0.89 (Carver et al., 1989). In Van Jaarsveld (2004) the alpha coefficients of the coping strategies ranged from 0.64 for Denial to 0.94 for Turning to Religion. Active Coping, Expressing Emotions and seeking Social Support also showed acceptable alpha coefficients at 0.84, 0.86 and 0.83 respectively.

The *Orientation to life questionnaire* (OLQ) (Antonovsky, 1983) was used to assess sense of coherence. The OLQ questionnaire assesses 3 components which are comprehensibility, manageability and meaningfulness. Cronbach alphas ranging from 0.84 to 0.93 prove that the OLQ has a high degree of internal consistency (Antonovsky, 1987) Furthermore Strümpfer and Wissing (1998) pulled together all studies done in South Africa and found a mean Cronbach of 0.87. In the study done by Van Jaarsveld (2004) he found Cronbach alpha coefficients of 0.78 (Comprehensibility), 0.82 (Meaningfulness) and 0.80 (Manageability).

Research procedure

Further research on the topic is encouraged by the organisation. The necessary permission was obtained from senior management as well as Human Resources to administer the instruments in the organisation. A convenience sample received an electronic link to the tests as well as an email letter explaining the aim of the study and a letter of informed consent. The identity of the participants remains confidential. The participants are aware that the research results are shared with the management of the organisation.

Statistical analysis

Cronbach alpha coefficients were used to determine 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 exist in the sample where after the correlation between the variables are determined by means of the Pearson's correlation coefficient. The statistical significance is set at 0.05. The cut-off point for practical significance that is used is as determined by Cohen (1988) which indicates 0.10 for a small effect, 0.30 for a medium effect and 0.50 for a large effect. For the purposes of this research, only correlations of medium and large effect will be reported. Regression analysis is used to determine the degree to which coping and sense of coherence can predict the levels of burnout of engineers in this sample group.

RESULTS

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

TABLE 2

Descriptive statistics and alpha coefficients of the measuring instruments

Item	N	Mean	SD	Skewness	Kurtosis	α
MBI (Burnout)						
Emotional Exhaustion	118	9.42	5.45	0.40	-0.67	0.91
Cynicism	118	9.31	6.72	0.78	0.15	0.85
Professional Efficacy	118	27.78	5.92	-1.13	2.20	0.85
COPE						
Active Coping	118	3.13	0.52	-0.75	1.38	0.65
Planning	118	3.25	0.59	-0.73	0.39	0.77
Suppressing of competing activities	118	2.76	0.49	-0.78	1.46	0.52
Restraint coping	118	2.60	0.47	0.08	0.80	0.41
SSSIR	118	2.67	0.72	-0.25	-0.70	0.82
SSSER	118	2.29	0.84	0.27	-0.93	0.88
Positive R and Growth	118	3.18	0.61	-0.56	-0.30	0.79
Acceptance	118	2.81	0.64	0.07	-0.12	0.73
Turning to religion	118	2.95	0.96	-0.63	-0.82	0.93
Focus on and venting of emotions	118	2.18	0.73	0.62	-0.06	0.78
Denial	118	1.40	0.44	0.94	0.01	0.61
Behavioural disengagement	118	1.58	0.48	0.64	-0.17	0.59
Mental disengagement	118	2.20	0.57	0.38	-0.16	0.55
Alcohol & Drug disengagement	118	1.17	0.53	3.36	11.25	-
Sense of coherence						

Comprehensibility	118	44.92	10.38	-0.38	0.11	0.83
Manageability	118	47.04	6.88	-0.28	-0.08	0.78
Meaningfulness	118	50.44	8.23	-0.39	0.47	0.86
SOC total	118	138.34	22.62	-0.31	0.16	0.91

SSSIR – Seeking social support for instrumental reasons; SSSER – Seeking social support for emotional reasons

From Table 2 it can be seen that most of the Cronbach alpha coefficients of the measuring instruments are considered to be acceptable compared to the guideline of $\alpha > 0.70$ (Nunnally & Bernstein, 1994). However, the subscales of Active Coping, Suppression of Competing Activities, Restraint coping, Denial, Behavioural Disengagement, and Mental Disengagement, where the Cronbach alpha coefficients are lower than the expected guideline of 0.70, will be excluded from further analyses. Although these results correlate with the results reported by Carver et al. (1989), who reported alpha coefficients for the COPE ranging from 0.45 to 0.92, these subscales could not be seen as reliable and are therefore excluded from the rest of the analyses. The coping scale of alcohol and drug disengagement consists of one item and a reliability analysis could therefore not be calculated for this scale. The data was distributed relatively normal with the exception of the subscales of Professional efficacy and alcohol and drug disengagement.

From Table 2 it also seems that engineers in this sample group experienced low levels of burnout. They mostly tend to use the coping strategies of Planning, Positive Reinterpretation and Growth, Turning to Religion, Acceptance and Seeking social support for instrumental reasons. The strategies that are the least used are Alcohol and Drug Disengagement, Denial, Behavioural Disengagement, and Focus on and Venting of Emotions. Furthermore it seems that they experience a high degree of sense of coherence.

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

TABLE 3

Relationship between the MBI, COPE and SOC

		Emotional Exhaustion	Cynicism	Professional Efficacy	Planning	Seeking Social Support (SSSIR)	Seeking Social Support (SSSER)	Positive Reinterpretation & Growth	Acceptance	Turning to Religion	Focus and venting of emotions	Comprehensibility	Manageability	Meaningfulness
Emotional Exhaustion	Pearson Sig. (2-tailed)	-												
Cynicism	Pearson Sig. (2-tailed)	0.60*++	-											
Professional Efficacy	Pearson Sig. (2-tailed)	-0.36*+	-0.50*+	-										
Planning	Pearson Sig. (2-tailed)	-0.16	-0.19*	0.34*+	-									
Seeking Social Support (SSSIR)	Pearson Sig. (2-tailed)	-0.15	-0.07	-0.00	0.33*+	-								
Seeking Social Support (SSSER)	Pearson Sig. (2-tailed)	-0.06	-0.07	0.07	0.23*	0.60*++	-							
Positive Reinterpretation & Growth	Pearson Sig. (2-tailed)	-0.26*	-0.25*	0.32*+	0.58*++	0.32*+	0.26*	-						
Acceptance	Pearson Sig. (2-tailed)	-0.12	-0.05	0.02	0.19*	0.11	0.06	0.30*+	-					
Turning to Religion	Pearson Sig. (2-tailed)	-0.19*	-0.21*	0.23*	0.35*+	0.25*	0.16	0.32*+	0.06	-				
Focus and venting of emotions	Pearson Sig. (2-tailed)	0.44*+	0.38*+	-0.23*	-0.06	0.23*	0.45*+	-0.13	-0.15	-0.08	-			
Comprehensibility	Pearson Sig. (2-tailed)	-0.38*+	-0.40*+	0.37*+	0.18*	-0.03	0.07	0.19*	0.03	-0.01	-0.26*	-		
Manageability	Pearson Sig. (2-tailed)	-0.47*+	-0.55*++	0.42*+	0.29*	0.03	0.14	0.34*+	0.05	0.18*	-0.29*	0.64*++	-	
Meaningfulness	Pearson Sig. (2-tailed)	-0.52*++	-0.66*++	0.53*++	0.44*+	0.24*	0.25*	0.49*+	0.08	0.38*+	-0.20*	0.42*+	0.72*++	-
Sense of Coherence	Pearson Sig. (2-tailed)	-0.53*++	-0.62*++	0.51*++	0.34*+	0.08	0.18	0.38*+	0.06	0.19*	-0.29*	0.84*++	0.91*++	0.81*++

* 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 emotional exhaustion is strongly negatively related to sense of coherence (practical significance of large effect), but moderately positively related to focus and venting of emotions (practical significance of medium effect). Cynicism is strongly negatively related to sense of coherence (practical significance of large effect), but moderately positively related to focus and venting of emotions (practical significance of medium effect). Professional efficacy is strongly positively related to sense of coherence (practical significance of large effect) and moderately positively related to Planning and positive reinterpretation and growth (practical significance of medium effect).

Multiple regression analysis was conducted to assess whether or not coping strategies and sense of coherence can predict burnout. Table 4 shows the results of the multiple regression analysis with emotional exhaustion as dependent variable and coping strategies and sense of coherence as the independent variables. Only coping strategies that displayed a statistically significant relationship with burnout were included in the regression analysis.

TABLE 4

Multiple regression analysis with Emotional Exhaustion as dependent variable and Coping Strategies and Sense of Coherence as independent variables

MODEL		UNSTANDARDISED COEFFICIENTS		STANDARDISED COEFFICIENTS	T	p	F	R	R ²	ΔR ²
		B	SE	Beta						
1	(Constant)	9.50	2.96	-	3.22	0.00	12.56	0.50	0.25	0.25
	Positive Reinterpretation and growth	-0.40	0.19	-0.18	-2.09	0.04*				
	Turning to Religion	-0.14	0.12	-0.10	-1.13	0.26				
	Focus and Venting of Emotions	0.76	0.15	0.41	5.00	0.00*				
2	(Constant)	20.39	3.51	-	5.81	0.00	17.16	0.62	0.38	0.13
	Positive Reinterpretation and growth	-0.10	0.19	-0.05	-0.55	0.59				
	Turning to Religion	-0.10	0.11	-0.07	-0.88	0.38				
	Focus and Venting of Emotions	0.58	0.15	0.31	3.99	0.00*				
	Sense of Coherence	-0.10	0.02	-0.41	-4.85	0.00*				

* $p < 0.05$

The results in Table 4 demonstrate that two coping strategies, namely positive reinterpretation and growth as well as focus and venting of emotions predicted 25% of the variance in emotional exhaustion ($F = 12.65$, $p < 0.05$, $\Delta R^2 = 0.25$). Adding sense of coherence as an independent variable (in step 2) resulted in a statistically significant increase in the prediction of the variance in emotional exhaustion ($\Delta F = 17.16$, $p < 0.05$, $\Delta R^2 = 0.13$),

but only the regression coefficients of focus and venting of emotions and sense of coherence were statistically significant. In sum, focus and venting of emotions and sense of coherence predicted 38% of the variance in emotional exhaustion.

Table 5 shows the results of multiple regression analysis with cynicism as the dependent variable and coping strategies and sense of coherence as independent variables.

TABLE 5

Multiple regression analysis with Cynicism as dependent variable and Coping Strategies and Sense of Coherence as independent variables

MODEL		UNSTANDARDISED COEFFICIENTS		STANDARDISED COEFFICIENTS	T	p	F	R	R ²	ΔR^2
		B	SE	Beta						
1	(Constant)	11.45	4.05	-	2.83	0.01	7.45	0.46	0.21	0.21
	Planning	-0.12	0.30	-0.04	-0.41	0.69				
	Positive Reinterpretation and growth	-0.40	0.29	-0.14	-1.37	0.17				
	Turning to Religion	-0.22	0.16	-0.13	-1.38	0.17				
	Focus and Venting of Emotions	0.81	0.19	0.36	4.17	0.00*				
2	(Constant)	28.21	4.22	-	6.69	0.00	17.57	0.66	0.44	0.23
	Planning	0.16	0.29	0.06	0.62	0.54				
	Positive Reinterpretation and growth	-0.04	0.25	-0.01	-0.15	0.88				
	Turning to Religion	-0.19	0.14	-0.12	-1.40	0.17				
	Focus and Venting of Emotions	0.50	0.17	0.22	2.89	0.01*				
	Sense of Coherence	-0.16	0.02	-0.55	-6.79	0.00*				

* $p < 0.05$

The results in Table 5 demonstrate one coping strategy, namely focus and venting of emotions predicted 21% of the variance in cynicism ($F = 7.45$, $p < 0.05$, $\Delta R^2 = 0.21$). Adding sense of coherence as an independent variable (in step 2) resulted in a statistically significant increase in the prediction of the variance in cynicism ($\Delta F = 17.57$, $p = <0.05$, $\Delta R^2 = 0.23$), with the regression coefficients of focus and venting of emotions and sense of coherence as statistically significant. In sum, focus and venting of emotions and sense of coherence predicted 44% of the variance in cynicism.

Table 6 shows the results of the multiple regression analysis with professional efficacy as the dependent variable and coping strategies and sense of coherence as the independent variables.

TABLE 6

Multiple regression analysis with Professional Efficacy as dependent variable and Coping Strategies and Sense of Coherence as independent variables

MODEL		UNSTANDARDISED COEFFICIENTS		STANDARDISED COEFFICIENTS	T	P	F	R	R ²	ΔR ²
		B	SE	Beta						
1	(Constant)	18.09	3.61	-	5.02	0.00	6.55	0.43	0.19	0.19
	Planning	0.54	0.27	0.22	2.01	0.05				
	Positive Reinterpretation and growth	0.35	0.26	0.14	1.35	0.18				
	Turning to Religion	0.14	0.14	0.09	1.00	0.32				
	Focus and Venting of Emotions	-0.39	0.17	-0.20	-2.27	0.03*				
2	(Constant)	7.34	4.12	-	1.78	0.08	10.10	0.56	0.31	0.12
	Planning	0.36	0.26	0.14	1.42	0.16				
	Positive Reinterpretation and growth	0.12	0.24	0.05	0.49	0.63				
	Turning to Religion	0.12	0.13	0.08	0.93	0.36				
	Focus and Venting of Emotions	-0.19	0.17	-0.09	-1.14	0.26				
	Sense of Coherence	0.11	0.02	0.40	4.46	0.00*				

* $p < 0.05$

The results in Table 6 demonstrate that one coping strategy, namely focus and venting of emotions predicted 19% of the variance in professional efficacy ($F = 6.55$, $p < 0.05$, $\Delta R^2 = 0.19$). Adding sense of coherence as an independent variable (in step 2) resulted in a statistically significant increase in the prediction of the variance in professional efficacy ($\Delta F = 10.10$, $p < 0.05$, $\Delta R^2 = 0.12$), but only the regression coefficient of sense of coherence was statistically significant. In sum, sense of coherence predicted 31% of the variance in professional efficacy.

DISCUSSION

The general aim of the study was to investigate the relationship between burnout, coping and sense of coherence amongst engineers and scientists within a large engineering company in South Africa.

The sample consisted of 118 engineers and scientists. These occupations are challenging, require a lot of responsibility and are usually occupied by above average intelligent, ambitious individuals. The prevalence of unrealistic job expectations, unmet organisational expectations (Jackson et al., 1986) chronic daily stresses and critical life events (Etzion, 1984) are known to cause burnout. Taking this into account, engineers and scientists can very likely be victims of burnout. The biographical detail of the sample group indicated that they were mostly processes engineers and scientists from middle management and possessed a bachelor's degree or post graduate qualification. More than half of the sample consisted of Afrikaans-speaking married men, who do not smoke, nor have more than four units of alcohol per week.

The Cronbach alpha coefficients of the MBI, SOC and COPE were considered to be acceptable with the exception of the subscales of Active Coping, Suppression of Competing Activities, Restraint coping, Denial, Behavioural Disengagement, and Mental Disengagement. They were excluded from the analysis due to their Cronbach alpha coefficients being lower than the expected guideline of 0.70 (Nunnally & Bernstein, 1994). The findings support the research by Maslach and Jackson (1981) where they used the MBI and had Cronbach alphas ranging between 0.71 and 0.91. It is also similar to that of Strümpfer and Wissing (1998) who pulled together all studies done in South Africa and found a mean Cronbach of 0.87 for the SOC questionnaire and as for the COPE results; they were between 0.42 and 0.89 in a study by Carver et al. (1989).

The sample proved to experience low levels of burnout. This is derived from the fact that they had low levels of emotional exhaustion and cynicism and a high degree of professional efficacy. In a practical sense this would mean that the sample does not get emotionally depleted from dealing with excessive job demands and stress. Low levels of cynicism would mean that they have high levels of self-awareness and feel in control of their surroundings and emotions. Professional efficacy would mean they experience little anxiety and are self

confident in their personal and professional life. They are also more likely to feel satisfied with past or present expectations and experiences (Van Dierendonck, Garssen & Visser, 2005). In general, these individuals are motivated and engaged and therefore do not pose a risk to the organisation or their clients.

In terms of their coping behaviour, they prefer to handle their stressors mainly by using Planning, Positive Reinterpretation and Growth, Turning to Religion and Active Coping strategies. It is therefore clear that the engineers employ positive and active coping strategies and do not use passive coping strategies such as avoidance and mental disengagement. With regard to the SOC results, it is clear that this group has a high level of SOC and therefore experiences their working environment and stressful situations that may cross their paths as predictable, explainable, less overwhelming and worthwhile to deal with.

Similar to the results of this sample, relatively low to moderate levels of burnout on the Emotional Exhaustion sub-scale whilst relatively high levels of Personal Accomplishment were also found in Van Jaarsveld's (2004) sample. In Van Jaarsveld's (2004) study, active coping, expressing emotions, acceptance, seeking social support and turning to religion were most regularly used by his sample. Furthermore, his sample scored the lowest on behavioural disengagement, denial, restraint coping and suppression of competing activities. Active coping should, however, receive special mention as it was significantly higher (25.69) than the scores on the other coping dimensions. He also received mean scores for the SOC that varied between 43.35 for meaningfulness and 50.29 for manageability.

When the results of the current research and that of Van Jaarsveld's (2004) study in the same organisation are compared, it can be noted that the results are more or less similar. This could be an indication of the fact that, regardless of significant changes in the organisational context since Van Jaarsveld's (2004) study (an existing skills scarcity and the challenges brought on by Broad Based Black Economic Empowerment as well as the recession in 2009), it did not have a significant effect on the engineers and scientists of this particular organisation with regard to their levels of burnout and coping. It might indicate that this organisation provided and continues to provide the necessary developmental strategies and support to combat burnout in this group of employees.

The results of this study show that a relationship exists between emotional exhaustion and focus and venting of emotions. It seems that engineers, who use venting of emotions as a coping strategy, are also likely to experience higher levels of emotional exhaustion. On the contrary, it seems that engineers with a high sense of coherence are likely to experience lower levels of emotional exhaustion. It therefore appears that venting of emotions might not be an effective coping strategy to counter burnout, but that having a high sense of coherence might buffer the onset of burnout. These results are consistent with the findings of Van der Colff and Rothmann (2009) who also found a positive relationship between emotional exhaustion and focus and venting of emotions, but a negative relationship between emotional exhaustion and sense of coherence in a group of nurses.

The results indicated that there is also a relationship between cynicism and the coping strategy of focus and venting of emotions. Employees who are venting their emotions are therefore likely to also experience higher degrees of cynicism. The relationship results between SOC and cynicism also indicate that a person who has a low SOC and experiences his challenges as overwhelming and unmanageable, is likely to be more cynical. A stronger SOC will therefore safeguard an individual from experiencing cynicism and all the negative implications thereof. These results are consistent with that of Steyn (2003), who conducted a study amongst engineers, technicians and electricians. Storm (2002) also found a strong relationship between cynicism and focus on and venting of emotions and it was also clear from the research that a low sense of coherence is related to cynicism.

The results indicated a positive relationship between planning, positive reinterpretation and growth as well as sense of coherence on the one hand and professional efficacy on the other hand. An engineer with a high level of professional efficacy therefore seems likely to interpret challenges positively and seek as well as seize the opportunities to grow from them. Studies conducted by Antonovsky (1987) and Feldt (1997) suggest that the availability of a wide range of coping strategies and the choice to utilise them at any time is crucial. Senior employees attend more courses in personal development, growth and leadership skills; therefore they are likely to have an increased ability to cope.

The study by Van Jaarsveld (2004) did not find any statistically significant relationships between burnout and the same coping scales as were found in this study, namely focus and venting of emotions, planning and positive reinterpretation and growth. However, Van

Jaarsveld (2004) also found statistically significant negative relationships between emotional exhaustion and cynicism on the one hand and sense of coherence on the other hand, as well as a statistically significant positive relationship between professional efficacy and sense of coherence.

The first hypothesis can therefore be partially accepted.

The regression results in this study have indicated that, should coping strategies alone be taken into account, planning and venting of emotions predict a portion of the variance in emotional exhaustion, but only focus and venting of emotions predict cynicism and professional efficacy. Focus on and venting of emotions can therefore be concluded to be a predictor of the levels of burnout that an engineer may experience.

SOC also proved to be a predictor of burnout amongst the target group and should SOC and coping strategies be used together as predictors they can predict significantly more of the variance in the three burnout scales. However, in the case of professional efficacy, only sense of coherence proved to be a significant predictor, with focus and venting of emotions not making a statistically significant contribution.

The results of the current study confirm that of Rothmann and Van der Colff (2009) in that SOC and focus on and venting of emotions, among other coping strategies, were also the significant predictors of the variance in emotional exhaustion, cynicism and personal accomplishment by predicting 33%, 17% and 24% for the respective dimensions of burnout.

The second hypothesis can therefore be partially accepted.

The limitations to this study were that the research design was cross-sectional which makes causality of the obtained results difficult to prove. At least part of the common variance of the measures has to be attributed to method variance due to the fact that self-report measures were relied on exclusively (Schaufeli, Maslach & Marek, 1993). The sample sizes were too small and therefore it cannot be generalised to the entire organisation or any other engineers and scientists in other engineering organisations.

This study generates several application-oriented suggestions and recommendations. The

engineering organisation should focus its recruitment endeavours on engineers and scientists with a strong SOC and constructive coping strategies. It should also make an effort towards the development of SOC by providing information in a consistent, structured, ordered and understandable format. The development and sustainability of coping strategies are also an important intervention. In this regard, employees should be made aware of which coping strategies they are likely to use in stressful situations and how these strategies can influence their levels of burnout. In any additional research it is recommend that large samples should be used. By doing this it might increase the confidence in the psychometric value of the measurement instruments. An additional research project within the same organisation and using the same measuring instruments might be of longitudinal value in evaluating the applied recommendations and the effect thereof.

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CHAPTER 4

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

Chapter 4 contains the conclusions, limitations and recommendations.

4.1 CONCLUSIONS

The focus of the dissertation was to investigate the relationship between burnout, coping and sense of coherence. The focus was also on establishing whether coping and SOC can be used as predictors of burnout. Research conclusions from the literature review and the empirical study for each of the research aims as stated in 1.3 in chapter 1 will be formulated below.

The specific literature objective was to conceptualise burnout, coping and sense of coherence as well as to investigate the theoretical relationship between the concepts. This objective was achieved by means of the literature review regarding burnout, coping and sense of coherence.

Burnout is defined as an experience of an individual employee when he or she is not able to cope with the demands of work. Prolonged stress and the inability to cope with negative conditions are additional contributors (Maslach & Jackson, 1984; Schaufeli & Enzmann, 1998). Van der Colff and Rothmann (2009) went further and identified emotional exhaustion, depersonalisation and lack of personal accomplishment as the three dimensions of burnout. How an individual adapts to these adverse circumstances is seen as coping and was defined by Carver and Scheier (1999, p. 562) as the direct response that follows a stressful experience. Individuals make use of a different range of coping strategies such as problem and emotional focused coping. A high SOC is an additional advantage that certain individuals have to cope with challenges. SOC is the way people attempt to make sense of their world and it consists of three dimensions, namely Comprehensibility, Manageability and Meaningfulness (Antonovsky, 1987).

The constructs of burnout, coping and sense of coherence are interlinked and have a specific influence on each other. Burnout is a result of the complex interaction of individual characteristics, work environment and the inability to successfully cope with the aforementioned. On the other hand, it can be said that the stronger the sense of coherence, the

better a person will be able to identify the nature of the stressor that he is confronted with and select the sufficient coping strategy. Individuals with a strong sense of coherence have the ability to evaluate the nature of the stressor and to apply the appropriate coping mechanism to deal with the stressor or to avoid it.

The objective of the empirical study was to determine whether or not low levels of burnout can be linked to a high sense of coherence and effective coping strategies as well as whether coping and sense of coherence can be predictors of burnout. By reporting, interpreting and integrating the results, certain conclusions can be drawn from the results.

The results of this study showed that a relationship exists between emotional exhaustion and focus and venting of emotions. It seems that engineers, who use venting of emotions as a coping strategy, are also likely to experience higher levels of emotional exhaustion. On the other hand, it seems that engineers with a high sense of coherence are likely to experience lower levels of emotional exhaustion. The results also indicated that there is a relationship between cynicism and the coping strategy of focus and venting of emotions. Employees who are venting their emotions are therefore likely to also experience higher degrees of cynicism. The results between SOC and cynicism also indicate that a person who has a low SOC and experiences his challenges as overwhelming and unmanageable, is likely to be more cynical. A stronger SOC will therefore safeguard an individual from experiencing cynicism and all the negative implications thereof. The results further indicated a positive relationship between planning, positive reinterpretation and growth as well as sense of coherence on the one hand, and professional efficacy on the other hand. An engineer with a high level of professional efficacy therefore seems likely to interpret challenges positively and seek as well as seize the opportunities to grow from them. Studies conducted by Antonovsky (1987) and Feldt (1997) suggest that the availability of a wide range of coping strategies and the choice to utilise them at any time is crucial. Senior employees attend more courses in personal development, growth and leadership skills; therefore they are likely to have an increased ability to cope. It therefore appears that venting of emotions might not be an effective coping strategy to counter burnout, but that having a high sense of coherence might buffer the onset of burnout. The regression results in this study indicated that focus on and venting of emotions as well as sense of coherence can be regarded as predictors of the levels of burnout that an engineer may experience. When SOC and coping strategies are combined as predictors more variance

of the three burnout scales can be predicted, except for professional efficacy where only sense of coherence proved to be a significant predictor.

4.2 LIMITATIONS

The limitations to the research with regard to the empirical and literature study are the following:

The research design was cross-sectional. A cross-sectional design makes it difficult to establish causality of obtained results.

At least part of the common variance of the measures has to be attributed to method variance due to the fact that self-report measures were relied on exclusively (Schaufeli, Maslach & Marek, 1993).

The sample sizes were too small and therefore findings cannot be generalised to the entire organisation or to other engineers and scientists in other engineering organisations.

4.3 RECOMMENDATIONS

When taking the conclusions and limitations into account they generate several application-orientated suggestions and recommendations regarding future research on burnout, coping and sense of coherence as well as specific recommendations for the organisation.

The engineering organisation should focus its recruitment endeavours on engineers and scientists with a strong SOC and constructive coping strategies.

The organisation should also make an effort to develop SOC by providing information in a consistent, structured, ordered and understandable format.

The development and sustainability of coping strategies are also an important intervention. In this regard, employees should be made aware of which coping strategies they are likely to use in stressful situations and how these strategies can influence their levels of burnout.

An additional research project within the same organisation and using the same measuring instruments might be of longitudinal value in evaluating the applied recommendations and the effect thereof.

In any additional research it is recommended that larger samples should be used and other organisations should also be included in the sample.

4.4 CHAPTER SUMMARY

In chapter 4 the conclusions, limitations and recommendations were formulated.

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