

**THE RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND
OCCUPATIONAL STRESS AMONGST FIREFIGHTERS IN A
METROPOLITAN MUNICIPALITY**

Submitted in partial fulfilment of the requirements for the MCom degree
in Industrial and Organizational Psychology at the college of Economic and
Management Sciences, University of South Africa

MARGARET NGOPE

Student number: 32834829

Supervisor: Prof R. M. Oosthuizen

November 2018

**THE RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND
OCCUPATIONAL STRESS AMONGST FIREFIGHTERS IN A
METROPOLITAN MUNICIPALITY**

DECLARATION

Student Number 32834829

I, the undersigned hereby declare that the dissertation, **THE RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND OCCUPATIONAL STRESS AMONGST FIREFIGHTERS IN A METROPOLITAN MUNICIPALITY**, is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

Signature

Date

ACKNOWLEDGEMENTS

This document would have been incomplete, worthless and meaningless without GOD's grace, favour and HIS mercy throughout.

I would like to thank the following individuals who made it possible for this dissertation to be completed.

Prof R.M. Oosthuizen, my supervisor: your guidance, criticism and tireless efforts are highly appreciated, baie dankie.

Professors A. Mji and H.B. Dondolo and Dr S. Simelane–Mnisi, thank you for your support and love, ndiya bulela.

The Jopie Van Rooyen team, particularly dr Taylor thank you very much for everything.

My husband, Mpho and two children (Vangile & Wandile): thank you for not giving up on me and for your love and support.

My mom, two sisters and my two brothers: thank you for the encouragement, making me laugh when I did not feel like it, your support and most importantly your love.

MAY GOD BLESS ALL OF YOU IN ABUNDANCE.

THE RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND OCCUPATIONAL STRESS AMONGST FIREFIGHTERS IN A METROPOLITAN MUNICIPALITY

ABSTRACT

The 21st century world of work is characterised by increased global competition, a relentless drive to cost effective measures, work pressure, highly constrained budgets, higher levels of unemployment, constant economic fluctuations, political instability as well as corruption. The general aim of this study was to determine the relationship between emotional intelligence and occupational stressors amongst firefighters in a metropolitan municipality. Although there has been some research conducted on stress amongst firefighters in South Africa, there has been no research on the two constructs of occupational stress and emotional intelligence of firefighters. The study was done through a quantitative research method. The sample was selected by using the non-probability sample of convenience. The sample was obtained by selecting any seven (7) of the 21 fire stations randomly. The sample consisted of 150 firefighters who completed a Biographical Information Questionnaire, Bar-On Emotional Quotient Inventory (EQ-I 2.0) and the Sources of Work Stress Inventory (SWSI). The questionnaires were analysed using SPSS, the correlation and multiple linear regression results indicated that there is a relationship between the two constructs, emotional intelligence and occupational stress amongst firefighters and that those with a higher level of emotional intelligence experienced less stress and those who scored lower on emotional intelligence experienced high levels of stress.

Keywords: Firefighters, emotional intelligence, occupational stress

TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS	iv
LIST OF FIGURES	xiii
LIST OF TABLES	xiv
CHAPTER 1: BACKGROUND AND OVERVIEW OF THE RESEARCH	1
1.1 INTRODUCTION	1
1.2 BACKGROUND AND MOTIVATION FOR THE RESEARCH	2
1.2.1 Background to the research	2
1.2.2 Motivation for the research	3
1.3 PROBLEM STATEMENT	7
1.3.1 Overview of the problem	7
1.3.2 Research questions	9
1.3.2.1 Research questions with regard to the literature review	9
1.3.2.2 Research questions with regard to the empirical study	9
1.4 AIMS OF THE RESEARCH	10
1.4.1 General aim of the research	10
1.4.2 Specific aims and objectives of the research	10
1.4.2.1 Literature review	10
1.4.2.2 Empirical study	11
1.5 PARADIGMATIC AND DISCIPLINARY CONTEXT OF THE STUDY	11
1.5.1 Disciplinary context	12
1.5.1.1 Industrial and organisational psychology	12
1.5.1.2 Employee and organizational well-being	13
1.5.1.3 Positive psychology	13
1.5.2 Paradigm perspectives of the research	13

1.5.2.1 Pathogenic orientation.....	14
1.5.2.2 Salutogenesis.....	14
1.5.3 Theoretical models.....	14
1.5.4 Conceptual descriptions.....	14
1.5.4.1 Stress	15
1.5.4.2 Occupational stress	15
1.5.4.3 Emotional Intelligence	15
1.5.5 The central hypothesis	16
1.6 RESEARCH DESIGN	16
1.6.1 Research variable.....	16
1.6.2 Research approach.....	17
1.6.3 Unit of analysis.....	17
1.6.4 Methods used to ensure validity and reliability.....	17
1.6.4.1 Validity.....	17
1.6.4.2 Reliability.....	18
1.6.5 Ethical research principles.....	18
1.7 RESEARCH METHODOLOGY	19
1.7.1 Phase 1: Literature review	19
1.7.2 Phase 2: Empirical study	19
1.8 CHAPTER LAYOUT	25
1.9 CHAPTER SUMMARY	25
CHAPTER 2: EMOTIONAL INTELLIGENCE.....	26
2.1 INTRODUCTION.....	26
2.2 CONCEPTUAL FOUNDATION OF EMOTIONAL INTELLIGENCE.....	26
2.2.1 Definitions of emotions and intelligence.....	26
2.2.1.1 Emotions	26
2.2.1.2 Intelligence.....	27

2.3 THEORETICAL OVERVIEW OF EMOTIONAL INTELLIGENCE.....	28
2.3.1 Emotional Intelligence and workgroup cohesion	30
2.3.2 Emotional Intelligence and performance feedback	31
2.3.3 Emotional Intelligence and performance.....	31
2.3.4 Emotional Intelligence and organisational commitment.....	31
2.3.5 Emotional Intelligence and Organisational citizenship	32
2.3.6 Emotional Intelligence as a moderator of role conflict and its outcomes..	32
2.3.7 Emotional Intelligence as a moderator of job insecurity and organisational commitment	32
2.3.8 Emotional Intelligence and ethics.....	32
2.3.9 Emotional Intelligence and job control.....	33
2.4 MODELS OF EMOTIONAL INTELLIGENCE.....	33
2.4.1 Goleman’s Model of Emotional Intelligence: a model of competencies focused on the workplace	33
2.4.1.1 Self-awareness	33
2.4.1.2 Self-management	34
2.4.1.3 Social competence	34
2.4.1.4 Social awareness	34
2.4.1.5 Relationship management.....	34
2.4.2 Bar-On’s Emotional-Social Intelligence Model	35
2.4.2.1 Intrapersonal skills	35
2.4.2.2 Adaptability.....	36
2.4.2.3 Stress management.....	36
2.4.2.4 General mood.....	36
2.4.3 Mayer and Salovey’s Emotional Intelligence Ability-based Model.....	36
2.5 THE MEASUREMENT OF EMOTIONAL INTELLIGENCE	39
2.5.1 Mayer-Salovey-Caruso Emotional Intelligence Test (Mayer et al., 2002)	39
2.5.2 Bar-On Emotional Quotient Inventory (EQ-I 2.0)	40

2.5.3 The Emotional Competency Inventory (ECI).....	41
2.6 DEMOGRAPHIC CHARACTERISTICS	42
2.6.1 Age.....	42
2.6.2 Gender	42
2.6.3. Ethnicity.....	48
2.6.4 Marital status	48
2.6.5 Qualifications.....	49
2.6.6. Job Experience.....	49
2.6.7. Job Title	49
2.7 PRACTICAL APPLICATION OF EMOTIONAL INTELLIGENCE.....	50
2.7.1 Practical application of Emotional Intelligence within the fire service	50
2.8 CRITICAL REVIEW OF EMOTIONAL INTELLIGENCE	51
2.9 RELEVANCE OF EMOTIONAL INTELLIGENCE WITHIN FIRE SERVICE DEPARTMENTS.....	53
2.10 CHAPTER SUMMARY	53
CHAPTER 3: OCCUPATIONAL STRESS.....	55
3.1 INTRODUCTION.....	55
3.2 A BRIEF OVERVIEW OF STRESS.....	55
3.3 CONCEPTUAL FOUNDATION OF OCCUPATIONAL STRESS.....	56
3.3.1 Occupational stress	56
3.3.1.1 Individual characteristics of occupational stress.....	58
3.3.1.1.1 Personality traits.....	58
3.3.1.1.2 Demographic characteristics	58
3.3.2 Occupational stressors	61
3.4 CRITICAL REVIEW OF OCCUPATIONAL STRESS	62
3.5 THEORIES OF OCCUPATIONAL STRESS.....	63
3.5.1 Transactional model of stress	63
3.5.2 Person-environment fit	64

3.5.3 The Sources of Work Stress Inventory	64
3.5.4 Demand-control-support theory	64
3.5.5 The effort-reward imbalance	64
3.6 OCCUPATIONAL STRESS MODEL	65
3.7 CHARACTERISTICS OF OCCUPATIONAL STRESS	66
3.7.1 Individual characteristics that contributes to occupational stress.....	66
3.7.2 Organisational characteristics that contribute to occupational stress	67
3.7.2.1 Task demands which relate to a person’s job	67
3.7.2.2 Role demands relate to pressures placed on a person	67
3.7.2.3 Interpersonal demands	67
3.7.2.4 Organisational structure	67
3.7.2.5 Organisational leadership.....	67
3.7.3 Environmental characteristics.....	68
3.8 PRACTICAL APPLICATION OF OCCUPATIONAL STRESS	68
3.8.1 Practical application of occupational stress within fire service departments	68
3.8.2 Practical application of occupational stress within the South African context	69
3.9 CRITICAL REVIEW OF OCCUPATIONAL STRESS EXPERIENCED BY FIREFIGHTERS	70
3.10 RELEVANCE OF OCCUPATIONAL STRESS WITHIN FIRE DEPARTMENTS.....	71
3.11 THEORETICAL INTEGRATION OF OCCUPATIONAL STRESS AND EMOTIONAL INTELLIGENCE.....	73
3.12 CHAPTER SUMMARY	74
CHAPTER 4: EMPIRICAL RESEARCH.....	75
4.1 DESCRIPTION OF THE POPULATION AND SAMPLE.....	75
4.1.1 Population.....	75

4.1.2 Sample	75
4.1.2.1 Distribution of the sample according to age	75
4.1.2.2 Distribution of the sample according to gender	76
4.1.2.3 Distribution of the sample according to ethnicity.....	76
4.1.2.4 Distribution of the sample according to the marital status.....	77
4.1.2.5 Distribution of the sample according to the highest qualifications.....	77
4.1.2.6 Distribution of the sample according to job experience	77
4.1.2.7 Distribution of the sample according to the job title.....	78
4.2 CHOOSING AND MOTIVATING THE PSYCHOMETRIC BATTERY	78
4.2.1 Bar-On Emotional Quotient Inventory (EQ-I 2.0)	78
4.2.1.1 Theoretical basis for the development of the Bar-On Emotional Quotient Inventory	79
4.2.1.2 Rationale of the Bar-On Emotional Quotient Inventory	79
4.2.1.3 Scales of the Bar-On Emotional Quotient Inventory	80
4.2.1.3.1 Self-perception Composite Scale	80
4.2.1.3.2 Self-expression Composite Scale	81
4.2.1.3.3 Interpersonal Composite Scale	81
4.2.1.3.4 Decision Making Composite scale	81
4.2.1.3.5 Stress Management Composite Scale.....	81
4.2.1.4 Administration of the Bar-On Emotional Quotient Inventory	82
4.2.1.5 Scoring and interpretation of the Bar-On Emotional Quotient Inventory	82
4.2.1.5.1 Multi-health Systems Inc. indicated how the EQ-I 2.0 scores are determined:	82
4.2.1.5.2 Guidelines for the interpretation of EQ-I 2.0 Scores	83
4.2.1.5.3 Interpretation of Standard Scores	83
4.2.1.6 Reliability and validity of the Bar-On Emotional Quotient Inventory	84
4.2.1.6.1 Reliability of the Bar-On Emotional Quotient Inventory	84
4.2.1.7 Justification for the selection of the Bar-On Emotional Quotient Inventory	85

4.2.2 Sources of Work Stress Inventory (SWSI).....	85
4.2.2.1 Scoring and interpretation of the Sources of Work Stress Inventory .	88
4.2.2.2 Justification for selection of the Sources of Work Stress Inventory...	89
4.2.3 Limitations of the psychometric battery	89
4.2.4 Ethical issues	89
4.3 ADMINISTRATION OF THE PSYCHOMETRIC BATTERY	90
4.4 STATISTICAL DATA PROCESSING	90
4.4.1 Confirmation of the reliability and validity of the EQ-I 2.0 and SWSI....	90
4.4.1.1 Reliability of the EQ-I 2.0.....	90
4.4.1.2 Validity of the EQ-I 2.0	91
4.4.2 Descriptive statistics	93
4.4.2.1 Descriptive statistics on the EQ-I 2.0 and SWSI	93
4.4.2.2 Inter-correlation analysis	93
4.5 FORMULATION OF RESEARCH HYPOTHESES	93
4.6 CHAPTER SUMMARY	94
CHAPTER 5: REPORTING AND INTERPRETING THE RESULTS	95
5.1 INTRODUCTION.....	95
5.2 CONFIRMATION OF THE RELIABILITY AND VALIDITY.....	95
5.2.1 Internal consistency reliability analysis of the Bar-On Emotional Quotient Inventory (EQ-i 2.0)	96
5.2.2 Validity of the Bar-On Emotional Quotient Inventory (EQ-I 2.0)	96
5.2.3 Internal consistency reliability analysis of the Sources of Work Stress Inventory (SWSI).....	97
5.3 DESCRIPTIVE STATISTICS	98
5.3.1 Descriptive statistics of the Bar-On Emotional Quotient Inventory (EQ-I 2.0).....	98
5.4 CORRELATION ANALYSIS	104
5.4.1 Bar-On Emotional Quotient Inventory (EQ-I 2.0) Composite scales	104

5.4.2 Sources of Work Stress Inventory (SWSI) subscales.....	105
5.4.3 Biographical data and the Bar-On Emotional Quotient Inventory (EQ-I 2.0) Composite scales	106
5.4.4 Biographical data and the Sources of Work Stress Inventory (SWSI) subscales	107
5.4.5 EQ-I 2.0 Composite scales and the SWSI subscales	109
5.5 INFERENTIAL STATISTICS	110
5.5.1 Multiple regression analysis	110
5.6 INTEGRATION OF RESEARCH RESULTS	114
5.6.1 Biographical profile of the sample	114
5.6.2 Descriptive statistics: Interpretation of results	114
5.6.2.1 Emotional intelligence profile.....	114
5.6.2.2 Occupational stressors profile.....	114
5.6.3 Empirical research aim 1	115
5.6.4 Empirical research aim 2	115
5.6.5 Empirical research aim 3	115
5.7 CHAPTER SUMMARY	116
CHAPTER 6: CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS	117
6.1 INTRODUCTION.....	117
6.2 CONCLUSION RELATING TO DEFINED AIMS.....	117
6.2.1 Conclusion regarding the literature review.....	117
6.2.1.1. Specific aim 1.....	118
6.2.1.2 Specific Aim 2	118
6.2.1.3 Specific Aim 3	119
6.1.1.4 Specific Aim 4	120
6.1.1.5 Specific Aim 5	121
6.2.2. Conclusions regarding the empirical study.....	122
6.2.2.1. Specific aim 1.....	123

6.2.2.2 Specific aim 2.....	124
6.2.2.3 Specific aim 3.....	124
6.2.2.4 Specific aim 4.....	125
6.2.2.5 Specific aim 5.....	126
6.2.3 Conclusions regarding the central hypothesis	127
6.2.4 Conclusions based on Industrial and Organisational Psychology	127
6.3 LIMITATIONS OF THE STUDY	128
6.3.1 Limitations of the literature review	128
6.3.2 Limitations of the empirical study	129
6.3.2.1 The measuring instrument.....	129
6.3.2.2 Generalisability	129
6.3.2.3 Race.....	130
6.3.2.4 The sample	130
6.4 RECOMMENDATIONS	131
6.4.1 Recommendations for Fire Service Departments	131
6.4.2 Recommendations for firefighters	132
6.4.3 Recommendations for future research	133
6.5 INTEGRATION OF THE STUDY	134
6.6 CHAPTER SUMMARY	135
REFERENCES.....	136
APPENDIX A: CEMS/IOP Research Ethics Review Committee Approval Letter	142

LIST OF FIGURES

<i>Figure 1.1:</i> Flow chart of the research method	36
<i>Figure 2.1:</i> Emotional Intelligence (Mayer & Salovey, 1993)	40
<i>Figure 2.2:</i> Goleman's model of Intelligence (Goleman, 2001)	44
<i>Figure 3.1:</i> Occupational stress model (Hurrell & McLaney, 1988)	68

LIST OF TABLES

<i>Table 2.1:</i> Three competing models of Emotional Intelligence	50
<i>Table 2.2:</i> Summary of emotional intelligence assessment models	55
<i>Table 4.1;</i> Frequency table of the age of the sample	85
<i>Table 4.2:</i> Frequency table of the gender of the sample	85
<i>Table 4.3:</i> Frequency table of the ethnicity of the sample	85
<i>Table 4.4</i> Frequency table of the marital status of the sample	86
<i>Table 4.5:</i> Frequency table of the highest qualifications of the sample	86
<i>Table 4.6:</i> Frequency table on the job experience of the sample	86
<i>Table 4.7</i> Frequency table of the sample according to job title	86
<i>Table 4.8:</i> Standard scores guideline and interpretation	87
<i>Table 4.9</i> Internal consistency reliability coefficients of SWSI	100
<i>Table 5.1:</i> Cronbach alpha value for the EQ-I 2.0	104
<i>Table 5.2:</i> Cronbach alpha value for the SWSI	105
<i>Table 5.3:</i> Descriptive statistics of the EQ-I 2.0	106
<i>Table 5,4:</i> Self Perception	107
<i>Table 5.5:</i> Self Expression	108
<i>Table 5.6:</i> Interpersonal	108
<i>Table 5.7:</i> Decision Making	109
<i>Table 5.8:</i> Stress Management	109
<i>Table 5.9:</i> Descriptive statistics of the SWSI	109
<i>Table 5.10:</i> Correlations amongst the EQ-I 2.0 composite scales	112
<i>Table 5.11:</i> Correlations between SWSI subscales	113

CHAPTER 1

BACKGROUND AND OVERVIEW OF THE RESEARCH

1.1 INTRODUCTION

This chapter outlines the introduction, scientific orientation, background, problem statement and motivation for the research. It further outlines the aims of the study, paradigmatic and the disciplinary context of the research. This chapter finally discusses the research design, ethical research principles, research methodology, chapter layout and summary. Firefighting has been dubbed as the most stressful job in the United States with a ranking of 71.59 out of 100 on its jobs-related stress score, which considers demands like deadlines, competitiveness, physical hazards, and travel as part of its methodology (Byrne, 2015).

In the course of doing their jobs, firefighters unavoidably experience stressful and even traumatic situations that can lead to emotional and behavioral health problems including anxiety, burnout, depression, alcoholism, substance abuse, post-traumatic stress disorder, and suicide (Deppa, 2015). According to (Sweeney, 2014) firefighters experience life-threatening and highly stressful events on a daily basis which is affecting them physically, mentally and emotionally. Furthermore, divorce, substance abuse, and heart attack rates in these professions are among the highest in the population. Efforts have been made to address some of the critical needs of these community servants; however, there is a lack of opportunities to cope with job-related stress as well as personal trauma and grief for firefighters, their families and the fire department chaplains.

(Sweeney, 2014) further maintains that the high levels of stress that firefighters routinely encounter can lead to chemical dependence, physical illness, emotional problems, and Post-Traumatic Stress Disorder (PTSD) and poor interfamily relationships including divorce. The lack of public support and compassion by citizens, government agencies, and business officials for the risks these firefighters endure and the occasional negative editorial coverage by the news media add to their anxiety level. The University of Melbourne conducted a study on mental well-being

of Canberra's firefighters and looked at how to reduce the impact of Post-Traumatic Stress Disorder (PTSD); the study found that that service workers were particularly vulnerable because of their difficult line of work.

In the United Kingdom firefighting is one of the seven most stressful jobs and it has been estimated that work-related stress and associated illnesses such as depression cost the UK economy over 12 billion pounds (Harris, Baloğlu, & Stacks, 2002). In South Africa when faced with an emergency, be it medical or an accident, the residents turn to emergency management firefighters. In the city of Johannesburg alone the emergency firefighting staff has to cope with about 250 000 calls a year.

Previous studies introduced the use of other coping strategies and resources to help and assist firefighters to cope with work-related stressors, but were not able to eradicate stress and help these individuals to better deal with stress effectively for them to become more efficient in their line of duty. This study explores how human emotions, raw intellect, cognitive fitness and hard-earned experiences can help firefighters make safe decisions and cope with all the work-related stressors on a daily basis.

1.2 BACKGROUND AND MOTIVATION FOR THE RESEARCH

1.2.1 Background to the research

Over the years, stress in the workplace has been an increasing problem for employees. This has resulted in job dissatisfaction, absenteeism, labour turnover and substance abuse, most often, alcohol abuse. The most damaging effect of occupational stress is the impact it has on the economy of the country (M.K.Loo*, 2015).

Recent statistics have shown that in Australia absenteeism levels (sick leave) rose to 8,3 days per employee per annum over 88 million a day. This resulted in a \$27.5 billion loss per annum (Absence Management Survey, 2013). Plessis and Smith (2013), who run a recruitment company, report that South Africa lost approximately R3,9 billion in output due to sick leave and absenteeism. Firefighters are among the group of workers who are most often absent, abuse alcohol and are compelled to resign due to the continual exposure to stressful and traumatic incidents in their line of duty. These

factors have been shown to have negative effects on their health (Lambert, Benight, Harrison, & Cieslak, 2012).

Firefighters provide many essential public services, including responding to fire accidents, medical emergencies, traffic accidents and natural disasters. Due to the unique nature of their work, firefighters often report elevated levels of stress. For example, firefighters must cope with exposure to potentially traumatic accidents such as suppressing fires, entering burning buildings to rescue trapped victims and provide medical aid to seriously injured victims (Kimbrel, Steffen, Meyer, Kruse, Knight, Zimering, & Gulliver, 2011).

According to Van der Ploeg and Kleber (2003) firefighters and emergency workers are working in the so-called medium- or high-risk professions and are confronted with acute stressors or critical incidents on a daily basis. Oosthuizen and Koortzen (2006) mention that in the United States of America approximately 280 firefighters are injured or killed every day, whereas every year 650 are compelled to resign as a result of occupational diseases, including psychological disorders. Firefighters are inundated with severely mutilated bodies, life-threatening situations and physically demanding activities.

Firefighters are also required to learn to function effectively in an environment characterised by recurrent sleep disturbances. They need to remain on high alert and endure long-shift schedules. Firefighters within the Tshwane metropolitan municipality work 84 hours per week and the shifts are common. The U.S. Department of Labour (2010) mentions that firefighters work extra hours in critical, emergency situations such as suppressing large fires, and they routinely work on holidays and weekends. In addition to these unique occupational stressors, firefighters are also subject to many of the more common occupational stressors, including co-worker conflict, conflict with leadership and workplace discrimination (Kimbrel et al., 2011).

1.2.2 Motivation for the research

Around the Metropolitan municipal area there are 21 fire stations. The function of these firefighters is to render a community-focused fire-safe, firefighting and rescue services to prevent loss of life and property resulting from any natural or man-made occurrence. According to Oosthuizen and Koortzen (2007), the symptoms of job stress

amongst firefighters can be summarised in the following areas, namely somatic symptoms, obsessive-compulsive behaviour, interpersonal sensitivity, depression and anxiety. People who have difficulty in handling stress tend to consume alcohol, smoke, and have poor eating habits. The stressful nature of urban firefighters' work is associated with negative health outcomes, including potential over-reliance on alcohol use.

Many researchers have conducted studies on the impact of post-traumatic stress disorder on firefighters and other emergency service personnel. Additionally, the existing literature provides discussions and data regarding the use of intervention strategies such as Critical Accident Stress Debriefing (CISD) and other similar methods of interventions intended to help prevent mental health symptoms for emergency service populations (Hokanson & Wirth, 2000). However, only a small body of literature reports investigations of coping-related factors such as emotional intelligence. The goal of this study is to investigate emotional intelligence, which is presumed to have a potential, positive impact on firefighters coping with occupational stressors.

(Krishnakumar & Lalitha, 2014) conducted a study on occupational stress and emotional intelligence for workers at Business Process Outsourcing engaged in publishing and digital solutions located in Puducherry, South India. According to their findings, there is a strong positive relationship between emotional intelligence and occupational stress. Carmeli (2003) studied the relationship between Emotional Intelligence (EI), job satisfaction, organisational commitment and work family conflict pertaining to 98 senior managers. The study states that employees high in EI are more able to balance work family conflict as they recognise and manage feelings of conflict as they occur.

Since emotions can have an effect on work outcome, EI may explain the individual differences in dealing with occupational stressors of firefighters. (Goleman, 1998) suggests that EI determines one's level of self-awareness, motivation, self-regulation of emotions, empathy, and proficiency in relationships. EI is seen as the ability to delay gratification, to regulate one's moods and keep distress from swamping the ability to think, emphasise and hope. According to Vikan, (2017) emotions should be an economic concern as much as it is a concern of individual behaviour, social

interaction, health, and cultural transactions because they influence the creativity and productivity of the workforce in organizations, which are the nave of societies' economy.

EI constructs have since been introduced by Salovey and Mayer (1990) as one's ability to be aware of one's feelings and to differentiate among them; it also includes using the information to guide one's own thinking and behaviour. A temporary definition of EI, according to these authors, indicates that it is an ability to recognise the meanings of emotions and the relationships to reason and problem solve.

People, with a high level of EI, are often described in more favourable terms by their peers. Furthermore, people rated as high in EI excel at understanding emotions and require less effort to solve problems; they are also reported to have higher levels of intelligence in verbal and social abilities. Individuals with high levels of EI are also less likely to engage in socially unacceptable behaviours such as drinking excessively, abusing drugs, or engaging in violent or other problem behaviours (Wagner & Martin, 2012).

According to Krishnakumar and Lalitha (2014) stress arises when workers meet pressure while completing a job or are unable to complete a job. They further mention that EI provides a better understanding of the work environment, which reduces occupational stress.

Oginska-Bulik (2005) investigated the relationship between emotional intelligence and stress in the workplace and health-related consequences in workers; the study confirmed EI as a shield that prevents workers from negative health outcomes, especially from the symptoms of depression. Krishnakumar and Lalitha (2014) further mention that individuals with high levels of EI, pronounced by the ability to recognise and express emotions as well as to manage and control themselves, show the ability to cope well with stress and suffer less from adverse health outcomes.

Occupational stress is a complex, dynamic process in which various factors (stressors) and modifying variables are interrelated. Whether a stressor produces an enduring health outcome or not depends on the extent to which employees perceive conditions as stressful and respond to it. One can assume that a high level of EI may reduce adverse health outcomes even in highly stressful conditions (Oginska-Bulik, 2005).

(Oginska-Bulik, 2005) also indicates that EI may be an important adaptive mechanism for helping individuals to interact with their environment, including work environment. Goleman (1998) identifies four general domains of EI and their associated competencies. These domains include self-awareness, self-management, social awareness and relationship management.

Self-awareness and self-management suggest a conscious understanding of one's internal emotional signals, thus avoiding knee-jerk emotional reactions while still being open to share personal feelings with others. Social awareness and relationship management include having a measure of empathy and emotional attunement to people's feelings. These include understanding both the personal and organisational mood and the ability to move them in a positive emotional direction (Couper, TESOL, & Karimi).

According to Bar-On, Brown, Kirkcaldy and Thome (2000) EI addresses the emotional, personal, and social and survival dimensions of intelligence which are vital for daily functioning. The less cognitive part of intelligence is concerned with understanding oneself and others, relating to people, and adapting to and coping with their immediate surroundings. These factors increase the ability to be more successful in dealing with environmental demands.

EI is tactical, immediate and as such reflects a person's common sense with the ability to get along in the world; it is the result of an adaptive interaction between emotion and cognition. Cognition includes the ability to perceive, assimilate, understand and handle one's own emotions with the capacity to detect and interpret the emotions of others to solve problems and to regulate behaviour (Salovey & Mayer, 1990).

(Krishnakumar & Lalitha, 2014) conducted a study on EI and occupational stressors and concluded that there is not much difference among male and female relationships when considering occupational stress and EI. However, other researchers Fernández-Berrocal, Cabello, Castillo and Extremera (2012) used the Mayer, Salovey and Caruso Emotional Intelligence Test which supports the widely held belief about women superiority in emotional processes. Women obtained higher scores than men on EI measures including the MSCEIT.

(Fernández-Berrocal, Cabello, Castillo, & Extremera, 2012) further included age in order to avoid the theoretical problems when analysing the relation between gender and emotional intelligence. The inclusion of age as a mediating variable gave a more complete picture of how gender is associated with emotional intelligence, and the results indicated that while gender may determine differences in EI, age mediates this relation such that these differences may decrease substantially or disappear altogether. In this study, the investigation between occupational stressors and EI of firefighters also includes age and gender to establish if there are any differences or not.

1.3 PROBLEM STATEMENT

1.3.1 Overview of the problem

Over the past few decades, researchers have shown increased interest in studying the relationship between stress and psychological health, (Michael, Anastasios, Helen, Catherine, & Christine, 2009). Stress represents one of the major health threats and is implicated as the most influential of the top ten causes of death in the United States, (heart disease, stroke, chronic liver disease, cancer, injuries, suicide, emphysema and chronic bronchitis). Michael et al. (2009), conducted a study in South Africa, which indicated that 34.7% of coloureds, 38.1 of whites and Asians and 35% of black South Africans suffer from high stress. Occupational stress is a serious threat to the health of individual workers, their families and the community at large.

According to WHO (2007) world-related stress is a pattern of physiological, emotional, cognitive and behavioural reactions to some extremely taxing aspects of work content, work organisation and work environment. When people experience work-related stress, they often feel tense and distressed and feel they cannot cope. Due to globalisation and changes in the nature of work, people in developing countries have to deal with increasing work-related stress, whereas in industrialised countries people are becoming more familiar with what work-related stress is and how to manage it (Houtman Jettinghoff, Employment, & Cedillo, 2007).

Dumitrescu (2014) defines occupational stress as a biological and psychological reaction of the body to aggression. To understand occupational stress, one must first understand the concepts underlying this process, using Lazarus's transactional definition; the concept refers to a gap between the environmental requests and the

individual resources. Noblet (2003) conducted a study in Australia which indicated that chronic occupational stress is regarded as both serious public health concern and a major impediment to organisational success.

In human terms, chronic job stress is associated with a range of physical (e.g. sleep deprivation), psychological (e.g. depression), social (e.g. interpersonal conflict), and behavioural (e.g. alcohol and other drug abuse) health problems (Noblet, 2003). For organisations, occupational stress can contribute to a number of outcomes, which are critical to organisational success, including absenteeism, labour turnover and job performance.

Some jobs are inherently dangerous including (criminal justice personnel, firefighters, ambulance drivers, military personnel and disaster teams) suddenly become witnesses to many terrible scenes and are exposed to personal danger routinely. They usually handle such incidents capably but occasionally a particularly bad episode will stay with them, appearing in memory, flashbacks and nightmares. Sleep disturbances, guilt fearfulness, and physical complaints may follow (Caspi, Hout, Belsky, Goldman, Harrington & Moffitti, 2014).

Milen (2009) mentioned that since the attacks in Oklahoma City, the twin towers and the Pentagon, fire departments have seen the extreme effects of stress on firefighting personnel. Even before these infamous attacks, stress always had a negative impact on the individuals' ability to function. Oosthuizen and Koortzen (2007) conducted a study in South Africa, which indicates that job stressors of firefighters can be categorised in two distinguishable areas namely stressors arising from outside the work situation and stressors originating within the work situation.

According to (Wagner & Martin, 2012) previous research has considered the impact of post-traumatic stress on firefighters and other emergency service personnel. Additionally, existing literature provides discussions and data regarding the use of intervention strategies such as critical incident stress debriefing (CISD) and other similar methods of interventions intended to help prevent mental health symptoms for emergency service populations.

The voluminous body of stress literature is quite clear about the negative effects of stress amongst emergency workers and the effects include impaired performance or

reduction in productivity, health problems, absenteeism, turnover, industrial accidents, alcohol and drug usage and purposively destructive behaviours (Naudé & Rothmann, 2003). However, in South Africa and globally only a small body of literature has investigated the role of cumulative and secondary stress, and even fewer has focused on coping-related factors such as EI and proactive coping and this shortfall lead to the following research questions which surrounds the research problem.

1.3.2 Research questions

1.3.2.1 Research questions with regard to the literature review

Based on the literature review, this research seeks to investigate the following questions:

- From a theoretical perspective, how is EI manifested amongst firefighters in a metropolitan municipality?
- From a theoretical perspective, how is occupational stress manifested amongst firefighters in a metropolitan municipality?
- What is the nature of the relationship between EI and occupational stress amongst firefighters in a metropolitan municipality?
- What role do the biographical variables (age, gender, ethnicity, marital status, qualifications, job experience and job title) play in EI and occupational stress amongst firefighters in a metropolitan municipality?
- What recommendations can be formulated for industrial psychology practices and future research?

1.3.2.2 Research questions with regard to the empirical study

Answers to the following research questions were probed in the empirical study:

- What is the empirical relationship between emotional intelligence and occupational stress amongst firefighters in a metropolitan municipality?
- Do firefighters from the various demographic groups differ significantly in terms of their EI and their perception of occupational stress as manifested within a sample of firefighters in a metropolitan municipality?

- What is the relationship between the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title), EI and occupational stress amongst firefighters in a metropolitan municipality?
- Do the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title) and EI significantly predict occupational stress amongst firefighters in a metropolitan municipality?
- Which recommendations can be provided for the practice of Industrial and Organisational Psychology and the well-being of firefighters, and what research strategies can be suggested based on the findings of the research?

1.4 AIMS OF THE RESEARCH

This study is based on the following general and specific research aims:

1.4.1 General aim of the research

The general aim of this study is to investigate the relationship between emotional intelligence and occupational stress amongst firefighters in a metropolitan municipality.

1.4.2 Specific aims and objectives of the research

The following specific aims and objectives were formulated for the literature review and the empirical study:

1.4.2.1 Literature review

The aims were to:

- conceptualise the construct of emotional intelligence amongst firefighters in a metropolitan municipality from a theoretical perspective;
- conceptualise the construct of occupational stress amongst firefighters in a metropolitan municipality from a theoretical perspective;
- conceptualise the implications of the relationship between EI and occupational stress amongst firefighters in a metropolitan municipality from a theoretical perspective;

- determine theoretically the role of the biographical variables (age, gender, ethnicity, marital status, qualifications, job experience and job title) in respect of emotional intelligence and occupational stress amongst firefighters in a metropolitan municipality; and
- determine the implications for industrial psychology practices and future research.

1.4.2.2 Empirical study

The objectives were to:

- empirically determine the relationship between emotional intelligence and occupational stress amongst firefighters in a metropolitan municipality;
- empirically determine whether firefighters from the various demographic groups differ significantly relating to emotional intelligence and their perception of occupational stress as manifested within a sample of firefighters in a metropolitan municipality;
- empirically determine the relationship between the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title), EI and occupational stress amongst firefighters in a metropolitan municipality;
- empirically determine whether the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title) and EI significantly predict occupational stress amongst firefighters in a metropolitan municipality; and
- Formulate recommendations for the practice of Industrial and Organisational Psychology and well-being of firefighters and to suggest further research strategies based on the findings of the research.

1.5 PARADIGMATIC AND DISCIPLINARY CONTEXT OF THE STUDY

According to Blanche, Blanche, Durrheim, and Painter (2006) paradigms are systems of interrelated ontological, epistemological, and methodological assumptions. Paradigms act as perspectives that provide a rationale for the research and commit the researcher to particular methods of data collection, observation, and interpretation.

Paradigms are thus central to research design, because they influence the nature of the research question, namely, what is to be studied. In designing a research study, the principle of coherence can be preserved by ensuring that the research question and methods used fit logically within the paradigm. It is very important that researchers recognise that their findings and conclusions are embedded in paradigms and they employ research designs that are coherent.

1.5.1 Disciplinary context

This study falls under the Psychology discipline, specifically Industrial and Organisational Psychology. For the purpose of the literature study, the focus is on employee organisational well-being and Positive Psychology. For the empirical study, the focus is on work-related psychological assessment (Psychometrics). The three branches are discussed next.

1.5.1.1 Industrial and organisational psychology

Industrial and Organisational Psychology is a branch of Psychology that utilises Psychological knowledge (principles, theory, research, methods) in the work context to assess, utilise, develop and influence individual, employees, groups and related organisational processes. In general, it can be said that in comparison to Psychology, which primarily emphasises individual behaviour, Industrial and Organisational Psychology involves individuals and groups in an Organisational context. According to Bergh and Geldenhuys (2013) Industrial and Organisational Psychology can be viewed as a scientific discipline for three reasons.

It utilises, develops, and teaches foundational knowledge, that is, Psychological theory about human behaviour in the work context. Its foundational knowledge enjoys good support through work-related research to further its knowledge of human behaviour by using effective research methodology and other assessment procedures.

Lastly, based on its theory and research findings, Industrial and Organisational Psychology is also an applied science, because it utilises many types of practical applications and methods to achieve the best fit between the employee and workplace, solves problems, and optimises employee and organisational performance.

1.5.1.2 Employee and organizational well-being

Bergh and Geldenhuys (2013) mention that employee and organisational well-being should be the main aim in the applied fields of Industrial and Organisational Psychology to ensure the best work performance and business outcomes. Employee and organisational well-being is also concerned with maladjustment and impaired work performance (Lowman, 1993). The focus is on optimal employee and organisational health, factors that may facilitate or hinder effective work performance, medical and psychological illness that may impair work behaviour, specific types of employee and organisational dysfunction, and methods of evaluating, managing, and promoting occupational health, including the treatment of impaired work behaviours.

1.5.1.3 Positive psychology

Positive psychology is often described as part of health psychology, which is concerned with the enhancement of optimal human functioning. Positive psychology is also viewed as the scientific paradigm studying what enables individuals and institutions to flourish by focussing on the expression of potential through positive well-being, positive traits, positive emotions, strengths, virtues and values towards optimal human functioning (Cilliers & Flotman, 2016),

The emphasis is on positive rather than negative aspects of human behaviour and well-being, and on enhancing human strength and resilience to function optimally in all areas of life. According to Coetzee and Cilliers, (2001) positive Psychology is the study of optimal human functioning with the aim of changing the focus of theory and practices in some fields of Psychology from pre-occupation primarily with disease and healing to well-being and the enhancement or fostering of strength and virtues. Positive Psychology addresses happiness, being optimistic about life and making life worth living.

1.5.2 Paradigm perspectives of the research

The literature review on occupational stressors is presented from the view of pathogenic orientation. EI is presented from the view of the Salutogenic orientation.

1.5.2.1 Pathogenic orientation

According to Bergh and Geldenhuys (2013) pathogenesis or psychopathology is related to patterns of abnormal or deviant behaviour which is associated with emotional distress (such as anxiety or depression), impaired behaviour, or the inability to function (such as not being able to hold down a job, or having problems in distinguishing reality from fantasy). Caspi *et al* (2014) defines Psychopathology as a clinically significant behavioural or psychological syndrome or pattern that occurs in an individual; it is associated with present distress (a painful symptom) or disability (impairment in one or more areas of functioning) or with a significantly increased risk of suffering, death, pain, disability, or an important loss of freedom. Occupational stressors fall under this orientation.

1.5.2.2 Salutogenesis

Salutogenesis is the origin of health and is a stress resource-orientated concept, which focuses on resources. It maintains and improves the movement towards health. It also provides the answer regarding why people, despite stressful situations and hardships, stay well. The theory can be applied at an individual, group and societal level (Lindström & Eriksson, 2005). Instead of studying abnormal behaviour, this paradigm focuses on locating and developing personal and social resources and adaptive tendencies, which result in effective coping behaviour and growth. (Breed, Cilliers, & Visser, 2006), suggest that there are six salutogenetic strengths namely, the sense of coherence, hardiness, learned resourcefulness, potency, internal locus of control and self-efficacy. EI falls under this category.

1.5.3 Theoretical models

The literature review on occupational stressors and EI is presented from the employee wellness perspective; in the case of occupational stressors, the theory of De Klerk (2013) is presented. EI is described referring to the theory of Salovey and Mayer (1990).

1.5.4 Conceptual descriptions

The conceptual definitions that are of relevance to this study are discussed below:

1.5.4.1 Stress

Stress can be described as a human being's inability to cope with day-to-day challenges that life throws at them. According to (De Klerk, 2013)) stress is the body's reaction to demands and changes that require it to adapt physically and emotionally. Stress is triggered when the situation is perceived as either a challenge or a threat to an individual. De Klerk (2013) asserts that in South Africa the ten most general claims accepted by medical aids are for the treatment of stress-related symptoms such as high blood pressure, high cholesterol, asthma, depression, menopause, type 1 and 2 diabetes, epilepsy, ischaemic heart disease and gastro-oesophageal reflux. Approximately 75% of visits to primary health care facilities are for stress-related conditions. Physiologically stress has harmful effects on the health of students/humans as immune system are affected and chronic diseases are started. Neurotic and psychotic problems in students/ humans are caused by psychological stress. (Rehana, 2018).

1.5.4.2 Occupational stress

According to De Klerk (2013), occupational stress is an uncomfortable feeling experienced by an individual who is required to change their desired behaviour because of opportunities, constraints or demands related to important work objectives. According to La Torre, Sestili, Mannocci, Sinopoli, De Paolis, De Francesco, Rapaccini & Barone, (2018), work-related stress is a serious occupational health problem and has been subject to a large amount of research and interest in recent years and is also the physical and emotional response that occurs when job demands are in conflict with the ability, resources or needs of the worker.

1.5.4.3 Emotional Intelligence

Emotional intelligence refers to an ability to recognise the meanings of emotion and their relationships and to reason and problem-solve bearing them in mind. EI is involved in the capacity to perceive emotions, assimilate emotion-related feelings, understand the information of those emotions, and manage them (Mayer, Salovey, & Caruso, 2002). According to Davis (2018), emotional intelligence (EI) can buffer potentially harmful effects of situational and chronic stressors to safeguard psychological wellbeing.

1.5.5 The central hypothesis

The following specific hypotheses were formulated and empirically tested in this study:

H1: There is a significant relationship between the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title), occupational stress and emotional intelligence amongst firefighters.

H2: The demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title), significantly predict that emotionally intelligent firefighters experience less occupational stress.

H3: The interaction effect between EI (independent variable) and occupational stress (dependant variable) predicts a significantly negative relationship between the two variables amongst firefighters.

H4: Firefighters from various demographic groups differ significantly in their occupational stress and EI level.

1.6 RESEARCH DESIGN

Babbie and Mouton (2010) describe a research design as a plan or structured framework of how you intend conducting the research process in order to solve the research problem. The design is presented in terms of the research approach and the research method. The research method includes the research participants, measuring instruments, research, ethical considerations and the statistical analysis. The research design follows next.

1.6.1 Research variable

The independent variable will be EI and the dependent variable is occupational stressors. The research attempts to determine whether a significant empirical relationship exist between these two variables.

1.6.2 Research approach

The quantitative cross sectional survey based research design was used in this study. The study is descriptive in nature, as it endeavours to describe the relationship between EI and occupational stress. According to Durrheim (1999) descriptive studies aim to describe phenomena accurately either through narrative descriptions, classification or measuring relationships. The researcher investigated the empirical relations between the variables by means of correlational statistical analysis.

1.6.3 Unit of analysis

According to Durrheim (1999) the objects of investigation are known as the unit of analysis. The unit of analysis describes the objects that are researched, in order to formulate generalisations and to explain differences (Caspi *et al*, 2014). The unit of analysis in this study is firefighters from the metropolitan municipality. In terms of biographical variables, the unit of analysis involves individuals, EI and occupational stressors are examined on an individual basis.

1.6.4 Methods used to ensure validity and reliability

1.6.4.1 Validity

Validity is a degree to which the measuring instrument adequately reflects the real meaning of the concepts being investigated (Caspi *et al*, 2014). Validity refers to the extent to which the research conclusions are sound (Van der Riet & Durrheim, 2010). Both internal and external validity are imperative for a good research design.

The validity of this study is ensured through the following:

- planning and structuring the research design effectively to ensure the validity of the research findings;
- using models and theories that are relevant to research topic, aim and problem statement;
- ensuring that the selected constructs are valid, appropriate and applicable;
- selecting accurate, appropriate and applicable measuring instruments;
- selecting a representative sample to ensure external validity;
- collecting, storing and analysing data electronically;

- ensuring data authenticity by means of encryption and password protection; and
- conducting appropriate and accurate data analysis.

1.6.4.2 Reliability

Reliability refers to the extent to which the research findings are repeatable (Durrheim & Painter, 2010). According to Mouton and Marais (1994) reliability also refers to the application of a valid measuring instrument to different groups under different conditions, resulting in the same observation. Reliability, is influenced by the following people: the researcher, the participants, the measuring instruments and the research context (Mouton & Marais, 1994).

In terms of the research process, the following control mechanisms were implemented to ensure reliability:

- The two measuring instruments used to collect data complied with stringent validity and reliability requirements;
- Only firefighters from the participating fire stations were invited to participate in the study;
- All data collected were stored electronically by the administrator and access to this information will be restricted to the researcher
- Reliability in analysis was ensured with the use of a statistical package (SPSS) to analyse the data.
- Cronbach Alpha coefficients were used to establish internal consistency and resultant reliability of the instruments used to collect data.

1.6.5 Ethical research principles

This research was guided by the ethical guidelines and principles, stipulated by the Health Professions Council of South Africa (HPCSA) and the Research Ethics Committee of the supervising academic institution. These guidelines formed the ethical basis of the study.

1.7 RESEARCH METHODOLOGY

The research methodology in this study is divided into two phases that are informed by literature review and empirical study respectively (Refer to Figure 1.1).

1.7.1 Phase 1: Literature review

Step 1: Literature review of emotional intelligence

This involves the conceptualisation of the construct EI.

Step 2: Literature review of occupational stress.

This involves the conceptualisation of the construct occupational stress.

Step 3: Conceptualisation of the theoretical relationship.

Here the focus is on integrating the above literature to ascertain the theoretical relationship between EI and occupational stress amongst firefighters in a metropolitan municipality.

1.7.2 Phase 2: Empirical study

Step 1: Determination and description of the population and sample

The metropolitan municipality comprises of 21 fire stations with a population of 846 firefighters. The sample was obtained by selecting any seven (7) of the 21 fire stations randomly. A sample of male (97) and female (53) firefighters from a diverse group was selected by using a non-probability sample of convenience. The ethnicity of the sample consisted of five coloureds, six whites, three Asian and 136 blacks, who were asked to complete the inventories. The sample consisted of firefighters who had been employed for the past 20 years, those been employed for the past five to ten years and newly appointed ones. Participants were juniors, seniors, leading firefighters and lastly commanders, the sample, therefore, consisted of a total of 150 firefighters.

Step 2: Measuring instruments

Three instruments were used to collect data in this study:

Biographical Information Questionnaire, Bar-On Emotional Quotient Questionnaire (EQ-I 2.0) and Sources of Work Stress Inventory (SWSI). These three instruments are briefly delineated next.

Biographical Information Questionnaire

A biographical questionnaire containing data regarding age, gender, ethnicity, marital status, qualifications, job experience and job title in addition to the quantitative instruments were used to measure the variables.

Bar-On Emotional Quotient Questionnaire (EQ-i 2.0)

According to Bar-On (2006) the Bar-On Emotional Quotient Inventory is a self-report measure of emotionally and socially intelligent behaviour which provides an estimate of one's underlying emotional and social intelligence. The EQ-I 2.0 was developed over a period of 17 years and normed on 3831 adults in North America. According to Mayer, Oosthuizen & Surtee (2017), the Bar-On model provides the theoretical basis for the emotional quotient inventory (EQ-I 2.0) instrument, which was originally developed to assess various aspects of this construct and to examine its conceptualisation. It has been translated into more than 30 languages, and data has been collected in numerous settings around the world. The EQ-I 2.0 was the first EI measure to be published by a psychological test publisher.

The reliability studies included the investigation of the internal consistency and test-retest reliability and showed good reliability. For all the subscales, the internal consistency coefficients were high ranging from a 0.69 (social responsibility) to 0.86 (self-regard), with an overall average internal consistency coefficient of 0.76 and thus indicating a very good homogeneity. Results for the test-retest reliability in the South African sample showed an average coefficient of 0.85 after one month and 0.75 after four months. Subscales embracing self-regard, happiness and impulse control appeared to be more stable over time in comparison to the other subscales.

Sources of Work Stress Inventory (SWSI)

The measuring instrument which was used in this study is the Sources of Work Stress Inventory (SWSI) developed by De Bruin and Taylor (2005) since the idea was to

measure occupational stressors. The SWSI is a South African developed assessment and has South African norms. It has been used in a number of studies investigating stress, burnout, EI, self-directed learning and coping in a variety of contexts, The SWSI consists of nine sources of work stress, namely role ambiguity, relationships, working environment, tools and equipment, work/home interface, workload, bureaucracy, autonomy and career advancement/job security.

Cronbach alpha coefficients were computed for each of the sources of stress scales and the General Work Stress Scale. These coefficients were as follows:

- role ambiguity (9 items);
- $\alpha = 0.89$ relationships (11 items);
- $\alpha = 0.93$ tools and equipment (8 items);
- $\alpha = 0.91$ job security (4 items);
- $\alpha = 0.93$ career advancement (5 items);
- $\alpha = 0.90$ bureaucracy autonomy (17 items);
- $\alpha = 0.95$ work/home interface (7 items);
- $\alpha = 0.86$ workload (9 items); and
- $\alpha = 0.93$ and general work stress (11 items) $\alpha = 0.92$.

This indicates high reliability for all sources of work stress (De Bruin & Taylor, 2005).

This instrument was developed to provide a measure of occupational work stress that not only determines a general level of stress (De Bruin & Taylor, 2005), but also identifies possible key sources of stress. People's profile on the SWSI allows them to isolate problem areas in their work environment in order to address them. At an organisational level, the SWSI can be used to assess the general level of employee stress, and pinpoint areas in the organisation that may contribute to employee stress.

In this sense, the SWSI may contribute to organisational diagnosis and serve as additional evaluation in terms of organisational climate. The SWSI can be used within the context of a comprehensive organisational evaluation in terms of organisational climate. The SWSI can be used within the context of a comprehensive organisational evaluation, or as part of a structured employee wellness programme. The general work

stress scale may also be used as a screening test for the individual or the organisation, when assessing employees' mental and physical health, as the two are often related.

Individual assessment can provide important information about the individual's level of work stress, and identify the sources of this stress for counselling purposes. Organisational assessment can allow the organisation to identify problem areas in the workplace and to plan and implement interventions to improve employee well-being.

The SWSI can also be used to evaluate the efficiency of individual or organisational intervention programmes, which were collected from fire-stations within the municipality. Participants were requested to voluntarily participate in the research using the two instruments mentioned above.

Step 4: Data analysis

The data was captured on an Excel spreadsheet, and then analysed statistically, using the Statistical Package for Social Sciences (SPSS, 2015). The data was analysed and the findings are reported through statistical tables and figures. Conclusions on the study emerged from the empirical study, which were drawn from the questions posed and the data analysed. Recommendations were formulated with reference to the literature and the empirical objectives of the research.

Step 5: Hypothesis

The research hypotheses were formulated to achieve the aims and objectives of the study.

Step 6: Results

Data analysis and findings were reported through statistical tables and figures. Interpretations relevant to statistical analysis were utilised to make sense of the data.

Step 7: Conclusions

Conclusions emerging from the empirical study were drawn based on the questions that were presented.

Step 8: Limitations of the research

Limitations of the study were also highlighted.

Step 9: Recommendations

Recommendations were formulated with reference to the literature and the empirical objectives of the research.

Step 10: Ethical considerations

In conducting the research, it is imperative to consider ethics. The purpose of ethical research planning is primarily to protect the rights and welfare of the participants. Research ethics refer to rules of morally good conduct for researchers (Gomm, 2008). A researcher has to ensure that individual rights are not infringed upon by observing the rights of the participants, their values and desires when carrying out research (Creswell, 2013). Issues of consent, honesty, respect for the integrity of the individual, confidentiality of certain information and anonymity were considered when carrying out this study. In this case, the researcher applied for ethical clearance from the Metropolitan Municipality Research and Innovation committee, as well as from the academic institution to conduct the envisaged research.

A letter was written to notify and inform the participants of the reason for the study, the content of the study and expected outcome of the study. Participants were informed of the anonymity maintained during the study. Codes were used instead of names to ensure confidentiality. On the issue of consent, the researcher ensured that the participants understand the purpose and procedures involved in conducting the study. This ensured that participants fully understood what they were expected to do. The data collected was secured.

Step 9: Limitations and recommendations

Limitations of the study were highlighted. Recommendations were formulated with reference to the literature and the empirical objectives of the research.

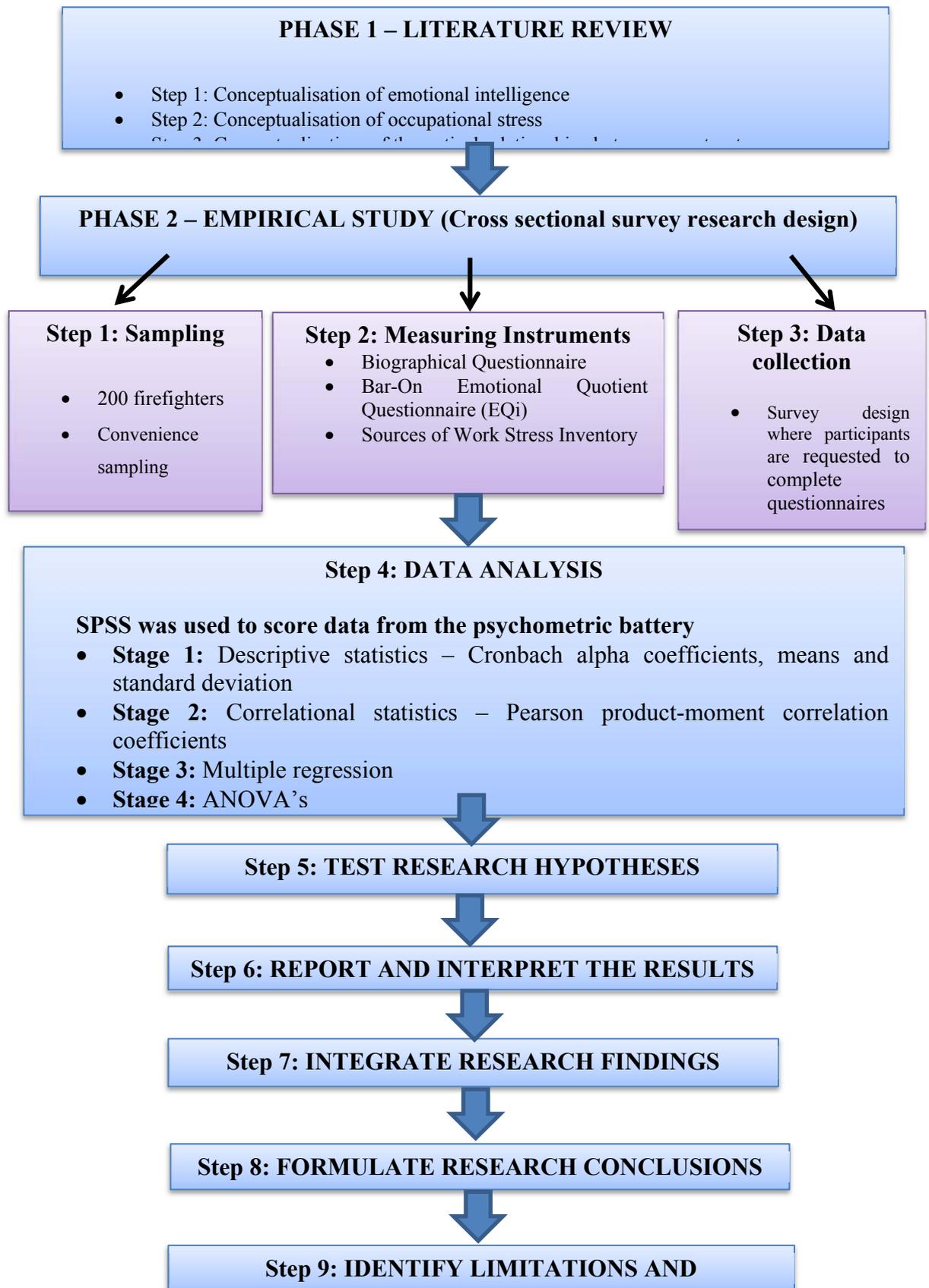


Figure 1.1 Flow chart of the research method

1.8 CHAPTER LAYOUT

Chapter 1: This chapter focuses on the problem statement, rationale and background to the study. The theoretical background and quantitative methodology chosen were shared.

Chapter 2: This chapter focuses on Emotional Intelligence and theories pertaining to the field of psychology.

Chapter 3: Chapter 3 focuses on occupational stress and coping strategies employed by the firefighters to survive.

Chapter 4: This chapter focuses on the empirical research.

Chapter 5: This chapter reports the results.

Chapter 6: The final chapter encompasses the conclusions, limitations and recommendations.

1.9 CHAPTER SUMMARY

In this chapter, the introduction, scientific orientation, background and motivation to this study were outlined in terms of presenting the overview of the problem, research questions, general and specific aims pertaining to the research problem. The chapter further highlighted the paradigmatic and disciplinary context of the study, research design, research methodology and the ethical research principles. EI will be discussed in Chapter 2.

CHAPTER 2

EMOTIONAL INTELLIGENCE

2.1 INTRODUCTION

This chapter outlines the definitions of emotions and intelligence, an overview of the concept EI, the conceptualisation of EI, the models of EI and its measurements, and lastly the aspect of EI within the fire service is addressed.

2.2 CONCEPTUAL FOUNDATION OF EMOTIONAL INTELLIGENCE

2.2.1 Definitions of emotions and intelligence

2.2.1.1 *Emotions*

According to Salovey and Mayer (1990) one tradition in Western thought has viewed emotions as disorganised interruptions and mental activity, so potentially disruptive that they must be controlled. Salovey and Mayer (1990) further mention that a second tradition views emotion as an organising response, because it adaptively focuses on cognitive activities and subsequent action. Rather than characterising emotion as chaotic, haphazard, and something to outgrow, it was suggested that emotions are primarily motivating forces; they are processes which arouse, sustain, and direct activity. Emotions are viewed as organised responses, crossing the boundaries of many psychological subsystems, including the physiological, cognitive, motivational, and experiential systems (Salovey & Mayer, 1990). Armstrong and Huffington (2018) view emotions as a function of the organization-in-context, rather than simply of the individual and his or her relationships, or of the group. Correspondingly, it is suggested, alertness to the emotional undertow of organizational life can be a powerful source of information for managers and leaders in enlarging understanding, reviewing performance, foreseeing challenges and opportunities, and guiding decision and action. Emotions can be distinguished from the closely related concept of mood in that emotions are shorter and generally more intense. (Russell & Barchard, 2002) define emotions by subdividing them into five components:

- Objectless affect, which is described as “Primitive affective feelings. Not necessarily associated with a particular object”;
- Attributed affect is defined as “Objectless affect that has been linked to a specific object”;
- Emotional behaviour which is defined as any overt activity (instrumental, expressive, physiological) associated with objectless affect or attributed affect”;
- Perception of affective quality refers to the ability of a specific object or situation to cause a particular feeling; and
- Emotional episode is defined as the “co-occurrence of the above-listed events: Objectless affect is attributed to an object (constituting attributed affect) with the object perceived in terms of affective quality and with emotional behaviour directed at the object.

2.2.1.2 Intelligence

According to (Salovey & Mayer, 1990) intelligence has been defined differently in different epochs. Definitions have ranged from Pythagoras none-too-helpful depiction of intelligence as “winds” to Descartes’s definition that intelligence is the ability to judge true from false. Perhaps the most often cited definition is Wechsler’s statement that “intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment.” Wade and Tavris (2006), describe intelligence as “the ability to profit from experience, acquire knowledge, think abstractly, act purposefully, or adapt to changes in the environment”.

In the present context, it is critical to distinguish between intelligence per se and models of intelligence. Intelligence according to the view described above, is a broad set of abilities. Models of intelligence, however, are (generally) more restrictive organisations of the field that serve to describe interrelations among or causes of mental abilities, (Salovey & Mayer, 1990). Spearman’s unifactorial “g”, view of intelligence-a model of intelligence holds that all mental abilities are inter-correlated, (Salovey & Mayer, 1990).

2.3 THEORETICAL OVERVIEW OF EMOTIONAL INTELLIGENCE

Historically, conceptually, psychometrically, and scientifically, there are many and substantial questions surrounding the possible value of the construct of EI, particularly with respect to work-related behaviour (Landy & Conte, 2010). EI research anchors its classical heritage in a comment made by E.L. Thorndike in Harper's magazine in 1920 about the possibility of a form of intelligence that he termed 'social intelligence' that was distinct from abstract or academic intelligence. He suggested three modes of intelligence: abstract, mechanical, and social (Landy, 2005).

As early as 1920, Thorndike proposed a model of intelligence, which included not only traditional intellectual factors, but what he also called social intelligence. Thorndike's definition of social intelligence has a cognitive and behavioural element and implies the following: firstly, the ability to understand and manage people as an intellectual capacity, secondly, the capacity is different from the abstract-verbal and concrete-mechanical aspects of intelligence (Landy, 2005). In essence, E.L. Thorndike defined social intelligence as the ability to perceive one's own and others' internal states, motives and behaviours and to act toward them optimally on the basis of that information (Mayer & Salovey, 1993).

According to the contemporary scholars, there is a clear connection between Thorndike's 1920 observation and today's construct of EI. The concept of EI has generated a broad interest both in the lay and scientific fields, overshadowing other less spectacular classical psychological concepts such as personality, or even a concept having bad press as IQ (Fernández-Berrocal et al., 2012) further mentions that there are several sociological and epistemological reasons to explain the fast and wide diffusion of the term EI in professional fields. According to Rehana (2018), Emotional intelligence focuses on social skills, self-awareness, empathy, self-regulation, self-management, interpersonal relationship and teamwork. People with high emotional intelligence are creative and successful

EI diffusion is one of the reasons identified by professionals on the importance and relevance of emotions and feelings for their work outcome, and in this sense EI has become a satisfactory and appropriate theoretical scaffold within the organisational

and educational fields to organise their everyday work, both for evaluative and formative tasks.

Salovey and Mayer (1990) mention that EI is also part of Gardner's view of social intelligence, which he refers to as the personal intelligences. Like social intelligences, the personal intelligences (divided into inter and intra personal intelligence) include knowledge about the self and about others. One aspect of the personal intelligence relates to feelings and is quite close to what EI is called.

In the past decade, the concept of EI has emerged as a potential new construct for explaining behavioural variance not accounted for by traditional measures of general academic intelligence or personality (Landy, 2005). According to (Fayombo, 2012) EI was first described by Salovey and Mayer (1990) (Salovey & Mayer, 1990) as a form of social intelligence that involves the ability to monitor one's own feelings and emotions, to discriminate among them, and to use this information to guide one's own thinking and action. It was made popular by (Goleman, 1998) who refers to EI as the ability to sense, understand, value and effectively apply the power and acumen of emotions as a sense of human energy, information, trust, creativity and influence. According to Cazan and Năstasă (2015), high levels of emotional intelligence are associated with lower levels of anxiety, stress, and burnout and with higher levels of satisfaction with life. These results are reported not only for the students, but also in professions, such as mental health professionals and teachers, emotional intelligence emerging as an important personality-level predictor of burnout and job satisfaction.

Currently the academic concept of EI has been developed through several models and frameworks and it plays a significant role in determining success in life in general and more in the organisational contexts. According to Fayombo (2012), the literature suggests that EI plays a key role in determining success in life and it becomes more and more important as people progress. Figure 2.1 shows the conceptualisation of EI.

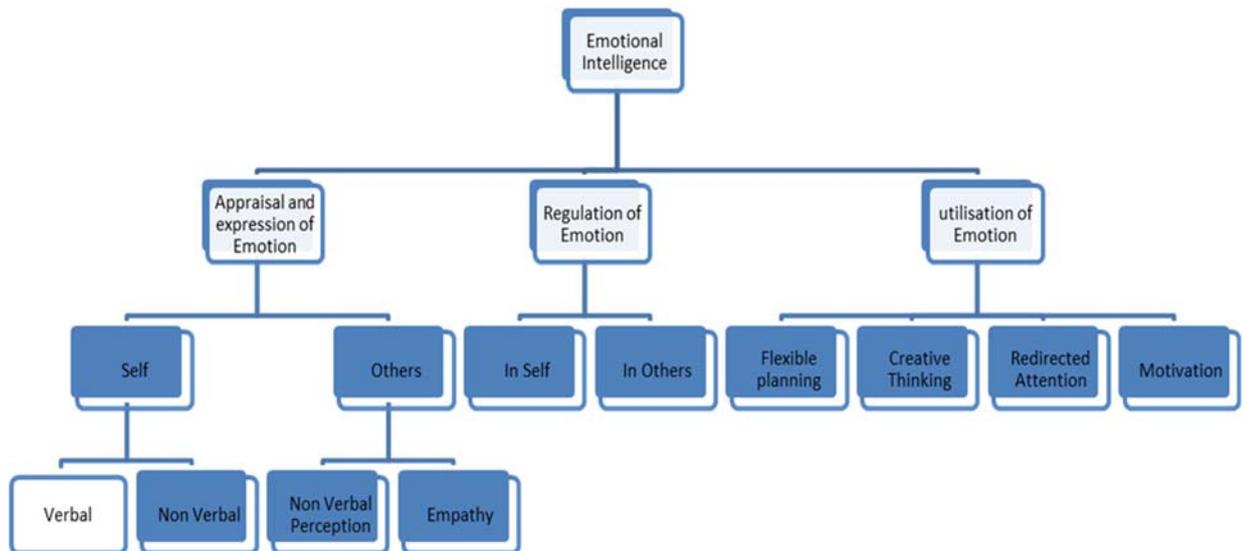


Figure 2.1: Emotional Intelligence (Mayer & Salovey, 1993)

Salovey and Mayer (1990) define EI as the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and action. This definition encompasses a number of distinct, but interrelated subdomains, represented in the figure above. According to (Morand, 2001):

- EI can itself be conceptualised relative to individuals’ awareness of their own emotions.
- It is the ability to express those emotions, to individuals’ perceptions of and awareness of emotions expressed by others; and
- EI involves the regulation of emotion both on oneself and in others, and the utilisation of emotion (for example, utilization of emotion for purposes of motivation. For creative acts, etc.).

Byrne (2015) developed a conceptual basis for examining the impact of EI in the workplace by posting the following nine empirically testable propositions.

2.3.1 Emotional Intelligence and workgroup cohesion

At the level of the workgroup, EI is manifested in harmonious relationships among workers. This harmony is the basis of synergistic sharing of skills and competencies within groups whose performance surpasses that of other groups with similar technical, but fewer social skills (Dunaway, 2014). According to Bhullar and Schutte

(2018), emotional intelligence is associated with markers of subjective well-being such as more positive mood, greater life satisfaction and more psychological well-being. Further, emotional intelligence is associated with positive characteristics such as prosocial behaviour, empathy, parental warmth, family and peer relations, good quality social interaction, and varied organizationally relevant outcome variables such as job satisfaction, organizational commitment, organizational productivity and trust.

2.3.2 Emotional Intelligence and performance feedback

(Byrne, 2015) found that the principal reason for conflict in the workplace was inept criticism, or the inability to provide subordinates with a balanced view of their performance, although criticism is a necessary component of feedback that disseminates information to employees about either maintaining current performance, improving performance, or reorienting their efforts in the new direction. At the root of each of these destructive forms of criticisms lies a lack of sensitivity for the feelings of recipients and the devastating impact it has on their effectiveness. Optimism is a component of EI; it rests on the premise that failure is not inherent in the individual: it may be attributed to circumstances that may be changed with refocusing of effort.

2.3.3 Emotional Intelligence and performance

Goleman (1998) describes flow as the harnessing of emotions to achieve superior performance and learning. Peak performances that stretch human potential well beyond its limits are achieved in a state of flow that aligns and energises emotions with tasks at hand. The optimism component of emotional intelligence has been found to enhance performance.

2.3.4 Emotional Intelligence and organisational commitment

EI incorporates the quality of emotional resilience, or flexible optimism, which gives the individual the ability to cope with interpersonal conflict. Instead of engaging in the disruptive activity of fault-finding, emotionally intelligent employees are flexibly optimistic enough to put difficulties behind them and redirect their attention to conflict resolution (Goleman, 1998).

2.3.5 Emotional Intelligence and Organisational citizenship

Organisational citizenship consists of behaviours that go beyond specific role requirements, with the stipulation that such behaviours are performed voluntarily without expectation of material or social rewards. EI may enhance certain prosocial behaviours, one of which is assisting co-workers with personal matters, being more sensitive to changes in the moods of co-workers, the emotionally intelligent employee may sense that other individuals are experiencing family problems, emotional upsets, or censure for violation of organisational rules (Goleman, 1998).

2.3.6 Emotional Intelligence as a moderator of role conflict and its outcomes

Person-role conflict is the conflict between personal and organisational values. Two forms of person-role conflict, emotional dissonance and ethical conflict may be moderated by EI. The ability of emotionally intelligent persons to empathise, enables them to understand the organisation's rationale for mandating certain emotional displays. Emotional intelligence moderates the emotional dissonance-job satisfaction and emotional dissonance-organisational commitment relationships. Higher levels of emotional intelligence results in less job dissatisfaction and organisational commitment from emotional dissonance (Goleman, 1998).

2.3.7 Emotional Intelligence as a moderator of job insecurity and organisational commitment

EI moderates the relationship between job insecurity and organisational commitment: Highly emotionally intelligent individuals suffer less erosion of organisational commitment and are less likely to withdraw as a result of job insecurity caused by short-term contracts (Goleman, 1998).

2.3.8 Emotional Intelligence and ethics

EI moderates the ethical role conflict-job satisfaction and ethical role conflict-organisational commitment relationships: Higher levels of EI may result in either more or less job dissatisfaction or organisational commitment from the ethical role conflict (Goleman, 1998).

2.3.9 Emotional Intelligence and job control

Job control moderates the emotional intelligence-organisational commitment relationship. In high-control situations, EI increases organisational commitment more than in low-control situations (Goleman, 1998).

2.4 MODELS OF EMOTIONAL INTELLIGENCE

(Zeidner, Matthews, & Roberts, 2004) distinguish between mental ability models focusing on aptitude for processing affective information and mixed models that conceptualise EI as a diverse construct, including aspects of personality as well as the ability to perceive, assimilate, understand and manage emotions. According to Petrides and Furnham (2006) the construct of EI posits that people differ in the extent to which they attend to, and utilise affect-laden information of an intrapersonal (e.g., managing one's own emotions) or interpersonal (e.g. managing others' emotions) nature. There is a distinction between trait EI (and emotional self-efficacy), which concerns emotion-related traits and self-perceived abilities measured via self-report questionnaires, and ability EI (or cognitive-emotional ability), which concerns actual emotion-related abilities measured via maximum-performance tests. In this section the explanation of the Goleman's Model of Emotional Intelligence and Bar-On's Emotional-Social Intelligence Model and Mayer and Salovey's Emotional Intelligence Ability-based Model will be presented. Bar-On's Emotional-social Intelligence Model will also be applied in this study.

2.4.1 Goleman's Model of Emotional Intelligence: a model of competencies focused on the workplace

2.4.1.1 Self-awareness

Self-awareness-means that you understand how you feel and can accurately assess your own emotional state. There are three components to this quadrant: self-assessment, accurate self-assessment, and self-confidence. Self-assessment includes understanding your own strengths and weaknesses. It is also about willingness to explore them both, either by thinking about them yourself or by discussing them with others. Self-confidence is the ability to ground oneself so that you are secure and self-assured in whatever situation you may find yourself (Goleman, 2010).

2.4.1.2 Self-management

Self-management builds on the understanding that you gained with self-awareness and involve controlling your emotions so that they do not control you. This could also be called self-control, in other words how you regulate to maintain your equilibrium in the face of any problem or provocation you may face. It takes into account your level of commitment and optimism (Goleman, 2010).

2.4.1.3 Social competence

This area of competence is concerned with Coleman's remaining two domains, social awareness and social skills. These skills look at how you manage your relationships with others, including their emotions (Goleman, 2010).

2.4.1.4 Social awareness

Social awareness involves expanding your awareness to include the emotions of those people around you. It includes being able to empathise with others and being aware of how the organisation that you are working in affects them. This covers your ability to read the emotional environment and power relationships you encounter in your role (Goleman, 2010).

2.4.1.5 Relationship management

Relationship management means using an awareness of your own emotions and those of others to build strong relationships. It includes the identification, analysis, and management of relationships with people inside and outside of your team as well as their development through feedback and coaching. It also incorporates your ability to communicate, persuade and lead others whilst being direct and honest without alienating people (Goleman, 2010).



Figure 2.2: Goleman's Model of Intelligence (Goleman, 2001)

2.4.2 Bar-On's Emotional-Social Intelligence Model

Bar-On's emotional-social intelligence model (Bar-On, 1997, Bar-On, 2000) is a cross-section of interrelated emotional and social competencies, skills and facilitators that determine how effectively we understand others and relate to them, and cope with daily demands. Bar-On's model defines the construct emotional-social intelligence, which is formed by a cross section of inter-related emotional and personality traits that are well established and interact together in the individual. Specifically, emotional and social intelligence comprises five high level factors that include intrapersonal skills, adaptability, stress management and general mood. These factors are subdivided into fifteen sub factors.

2.4.2.1 Intrapersonal skills

Intrapersonal skills refer to the ability of being aware and understand emotions, feelings, and ideas in the self, and it is subdivided into five sub factors (self-regard, emotional self-awareness, assertiveness, independence, and self-actualisation). Interpersonal skills refer to the ability of being aware and understanding emotions, feelings, and ideas in others, and it is subdivided into three sub-factors (empathy, social responsibility, and interpersonal relationships).

2.4.2.2 Adaptability

Adaptability refers to the ability of being open to change our feelings depending on the situations, and includes the three sub-factors (reality-testing, flexibility and problem-solving). Individuals excel at adaptability if they display flexibility and a willingness to negotiate. Individuals who are skilled in solving problems also display a healthy psychological attitude.

2.4.2.3 Stress management

Stress management refers to the ability to cope with stress and control emotions; it is composed of the sub-factors (stress tolerance and impulse control). To be able to deal with life's challenges which cause stress, demands resilience, tolerance and control of emotions. An individual who can control emotions, will cope with stress more effectively than those who are prone to react immediately in an emotional manner.

2.4.2.4 General mood

General mood refers to the ability of feeling and expressing positive emotions, being optimistic, and comprises the sub-factors optimism and happiness. A general mood of optimism serves as a definite predictor of a person's state of optimism. An optimistic person displays positive emotions of expecting the best to come, whereas a negative person dwells on the dark side of life.

2.4.3 Mayer and Salovey's Emotional Intelligence Ability-based Model

Reviewing the literature on EI, it is found that Mayer and Salovey's mental ability model is the theoretical approach that has generated the largest number of research published in peer-reviewed journals (Fernández-Berrocal & Extremera, 2006). The interest of the scientific community of this model is based on several reasons: the solid and justified theoretical base, and the novelty of the measurement compared to other approaches and its systematic evaluation and support by empirical data obtained from basic and applied fields. Although there was a previous theoretical approach (Salovey & Mayer, 1990), the most accepted proposal is the one that considers EI as a mental ability to perceive accurately, appraise, and express emotion: the ability to access and/or generate feelings when they facilitate thought and the ability to regulate

emotions to promote emotional and intellectual growth (Fernández-Berrocal & Extremera, 2006).

The model comprises of four abilities: perception, assimilation, understanding, and regulation of emotions. Concisely, emotional perception consists of the ability to perceive emotions of the self and others, and of objects, art, stories, music, and other stimulus. The assimilation of emotions is the ability to generate, use, and feel emotions as necessary to communicate feelings, or to use them in other cognitive processes. Emotional understanding is related to the ability to understand emotional information, how emotions combine and shift across time, and the ability to appreciate emotional meanings; finally emotional regulation refers to the ability to stay open to feelings, to monitor and regulate one’s and other’s emotions to promote understanding and personal problems (Fernández-Berrocal & Extremera, 2006). Table 2.1 provides a summary of the three competing models of EI.

Table 2.1: Three competing models of Emotional Intelligence

Three Competing Models, all Labelled “Emotional Intelligence”		
Mayer & Salovey (1997)	Bar-On (1997)	Goleman (1995a)
Overall Definition		
<p>“Emotional Intelligence is the set of abilities that account for how people’s emotional perception and understanding vary in their accuracy. More formally, we define emotional intelligence as the ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion in the self and others” (after Mayer & Salovey, 1997).</p>	<p>“Emotional intelligence is ... an array of non-cognitive capabilities, competencies, and skills that influence one’s ability to succeed in coping with environmental demands and pressures” (Bar-On, 1997, p.14).</p>	<p>“The abilities called here emotional intelligence, include self-control, zeal and persistence, and the ability to motivate oneself.” (Goleman, 1995a, p. xii). [...and...]”There is an old-fashioned word for the body of skills that emotional intelligence represents: character” (Goleman, 1995a, p. 28).</p>

Major areas of skills and specific examples

Perception and expression of emotion	Intrapersonal skills	Knowing one's emotions
<ul style="list-style-type: none"> Identifying and expressing emotions in one's physical states, feelings, and thoughts Identifying and expressing emotion in other people, artwork, language, etc. 	<ul style="list-style-type: none"> Emotional self-awareness Assertiveness Self-Regard Independence 	<ul style="list-style-type: none"> Recognising a feeling as it happens Monitoring feelings from moment to moment
<ul style="list-style-type: none"> Assimilating emotion in thought 	<p style="text-align: center;">Interpersonal skills</p> <ul style="list-style-type: none"> Interpersonal relationships Social responsibility Empathy 	<p style="text-align: center;">Management emotions</p> <ul style="list-style-type: none"> Handling feelings so they are appropriate Ability to soothe oneself Ability to shake off rampant anxiety, gloom, irritability
<ul style="list-style-type: none"> Emotions prioritise thinking in productive ways Emotions generated as aids to judgment and memory 	<p style="text-align: center;">Adaptability scales</p> <ul style="list-style-type: none"> Problem solving Reality testing Flexibility 	<p style="text-align: center;">Motivating oneself</p> <ul style="list-style-type: none"> Marshalling emotions in the service of a goal Delaying gratification and stifling impulsiveness Being able to get in to the "flow" state
<p style="text-align: center;">Understanding and Analysing Emotion</p>	<p style="text-align: center;">Stress-management scales</p> <ul style="list-style-type: none"> Stress tolerance Impulse control 	
<ul style="list-style-type: none"> Ability to label emotions, including complex emotions and simultaneous feelings Ability to understand relationships associated with shifts of emotion 	<p style="text-align: center;">General mood</p> <ul style="list-style-type: none"> Happiness Optimism 	<p style="text-align: center;">Recognising emotions in others</p> <ul style="list-style-type: none"> Emphatic awareness Attunement to what others need or want
<ul style="list-style-type: none"> Reflective regulation of emotion 		<ul style="list-style-type: none"> Handling relationship
<ul style="list-style-type: none"> Ability to stay open to feelings. 		<ul style="list-style-type: none"> Skill in managing emotions in others

<ul style="list-style-type: none"> Ability to monitor and regulate emotions reflectively to promote emotional and intellectual growth (after Mayer & Salovey, 1997, p.11) 	<ul style="list-style-type: none"> Interacting smoothly with others
Model type	
Ability	Mixed
	Mixed

2.5 THE MEASUREMENT OF EMOTIONAL INTELLIGENCE

2.5.1 Mayer-Salovey-Caruso Emotional Intelligence Test (Mayer et al., 2002)

This instrument provides an indicator of people’s emotional performance level in different items that evaluate; the ability to perceive emotions in faces, pictures, and abstract designs; the ability to assimilate emotions in several thinking and decision-making processes; the ability to understand simple and complex emotions; and finally the ability to manage and regulate personal and others’ emotions.

The MSCEIT V2.0, potentially improves upon earlier measures and can inform the debate over the scoring, reliability, and factor structure of such scales (Mayer et al., 2002). The MSCEIT is intended to measure four branches or skill groups of EI:

- perceiving emotion accurately;
- using emotion to facilitate thought;
- understanding emotion; and
- managing emotion.

The MSCEIT and its predecessors are based on the idea that EI involves problem solving with and about emotions. Such ability tests measure something relatively different from, self-report scales of EI, with which correlations are rather low.

The four branches of EI are perceiving emotions, facilitating thought, understanding emotions and managing emotions. Perceiving emotions is the ability to perceive emotions in oneself and others as well as in objects, art, stories, music, and other

stimuli. Facilitating thought is the ability to generate, use, and feel emotion as necessary to communicate feelings or employ them in other cognitive processes. Understanding emotions is the ability to understand emotional information, to understand how emotions combine and progress through relationship transitions, and to appreciate such emotional meanings. Managing emotions is the ability to be open to feelings, and to modulate them in oneself and others so as to promote personal understanding and growth (Mayer et al., 2002).

2.5.2 Bar-On Emotional Quotient Inventory (EQ-I 2.0)

According to Rehana (2018) EI has the potential to identify and understand one's own and others' emotions is termed as emotional intelligence. It is the ability to understand the feelings and spell out the emotions. In order to evaluate the factors proposed in the Bar-On's Emotional-Social Model, Bar-On developed the first commercial instrument available to measure EI (Bar-On, 1997). Later, Bar-On designed a large amount of measuring instruments (i.e. interviews, questionnaires for external raters, self-report measures for different ages, and different versions of these instruments distributed by Multi-Health System (MHS) (Fernández-Berrocal & Extremera, 2006).

For this study, the Emotional quotient Inventory (Bar-On, 1997) is used as self-reported measure comprising 133 items that evaluate the five components described in the theoretical model. The EQ- is a wide inventory that includes many emotional and social competencies, giving not just an estimation of the EI level, but also an affective and social profile (Bar-On, Brown, Kirkcaldy, & Thome, 2000).

The Bar-On model provides the theoretical basis for the EQ-I 2.0, which was originally developed to assess various aspects of this construct as well as examine its conceptualisation. According to this model, emotional-social intelligence is a cross-section of interrelated emotional and social competencies, skills and facilitators that determine how effectively we understand and express ourselves, understand others and relate with them, and cope with daily demands.

The development of the Bar-On model and measure of Emotional and social intelligence proceeded in six major stages over a period of seventeen years (Bar-On, 2006).

- **Stage 1:** Identifying and logically clustering various emotional and social competencies that impact on effectiveness and psychological well-being;
- **Stage 2:** Clearly defining the individual key clusters of competencies, skills and facilitators that surfaced;
- **Stage 3:** Initially generating approximately one thousand items based on professional experience;
- **Stage 4:** Determining the inclusion of fifteen primary scales and 133 items in the published version of the instrument based on a combination of theoretical considerations;
- **Stage 5:** Norming the final version of the instrument on 3 831 adults in the United States of America; and
- **Stage 6:** Continuing to norm and validate the instrument across cultures.

The reliability of the Bar-On model has been examined by a number of researchers over the past twenty years. A consensus of findings reveals that the Bar-On conceptual and assessment model is consistent, stable and reliable (Bar-On, 2006). In an effort to examine the divergent construct validity of the Bar-On model, the EQ-I 2.0 has been concomitantly administered and the findings suggest that EQ-I 2.0 possesses good construct validity – i.e., for the most part, this instrument is measuring what it is designed to measure.

2.5.3 The Emotional Competency Inventory (ECI)

Goleman who proposed the Goleman's model of EI introduced emotional competence as a learned capability based on EI that results in outstanding performance at work (Fernández-Berrocal & Extremera, 2006). In order to evaluate social and emotional competencies in the organisation, this approach uses 360 measures based on external raters. This methodology is easier and quicker than other measurement methods such as the individualised interview, and it is because it provides a general indicator of twenty emotional competencies regarding the work performance using just one instrument. Besides this instrument showing higher security and reliability than others, it also allows the comparison between the employees' perceptions of their own competencies and other employees and the boss' perceptions of these competencies.

The instrument used to measure/evaluate Goleman's model is the Emotional Competence Inventory 2.0 (ECI 2.0), which is based on 360 degrees methodology and shows evidence of validity and reliability (Goleman, 2001). The emotional competence inventory consists of 110 items, where three items are the minimum number to evaluate each competence. The emotional competence inventory comprises of two ways of evaluation: a self-reported measure where people are asked to estimate their performance in each one of the competencies, and an evaluation by an external moderator, such as work mates or superiors.

2.6 DEMOGRAPHIC CHARACTERISTICS

2.6.1 Age

Based on research findings provided by the Reuven Bar-On EI of older groups usually scored significantly higher than the younger groups and respondents in their late 40s obtained the highest mean scores (Bar-On, Maree, & Elias, 2007). According to Kumar and Muniandy (2012), Malaysian respondents suggest spirituality and maturity as important aspects to develop stable emotions. Maturity, due to age, could also be a supporting factor to the high level of EI among those above 40 years. Whereas Landa, López-Zafra, Martos, and del Carmen Aguilar-Luzón, (2008) differ with Bar-On et al. (2007) stating that younger individuals score higher in EI than their older counterparts; this can be explained by the fact that young individuals are more motivated and satisfied.

2.6.2 Gender

A study conducted by Mayer, Caruso and Salovey (1999) shows that women generally have higher scores in EI than men, however these differences occur mainly in the perception of emotions subscale (and not in the overall EI score), where females perform better than males. Goleman (1998) states that women are more empathic than men are. Concerning EI adaptability, the results did not indicate any significant difference towards gender. Bar-On, Maree, and Elias (2007) assert that there are no gender differences in terms of total EI when comparing males and females. Mayer, Oosthuizen and Surtee, (2017) mention that women in general have learned to manage their (emotional) impulse control to cope with their emotions.

Table 2.2 Summary of emotional intelligence assessment models

Assessment model	Description	Dimensions	Evaluation
Emotional Competence Inventory (ECI) (Version 2) (Wolff, 2005)	First version designed to fit Goleman’s model of 1988.	Self-awareness	Reliabilities of sub-scales are low (0.58 – 0.817) considering high stakes application.
	Version 2 clearly measures a different competence model. (Matthews et al., 2002)	Emotional self-awareness Accurate self-assessment Self-confidence	
	Self-report competency questionnaire designed to be used as a 360-degree evaluation tool.	Self-management	Some overlap found between competencies and Big Five factors, for example
	20 competencies clustered into four higher-order dimensions.	Emotional self-control Trustworthiness	“Conscientiousness”.
	(Wolff, 2005)	Conscientiousness Adaptability Achievement orientation	(Matthews et al., 2002)

Initiative

Social Awareness

Empathy

Customer service

Organisational service

Organisational awareness

Social skills

Influence

Communication

Conflict management

Leadership

Change catalyst

Building bonds

Teamwork and collaboration

(Wolff, 2005)

Bar-On quotient (EQ-I 2.0)	Emotional Inventory	Self-report measure. It consists of 15 subscales, which in turn, define five higher order dimensions.	Intrapersonal Emotional self-awareness Assertiveness Self-regard Self-actualisation Independence Interpersonal	High levels of internal consistency as well as high test-retest reliability over one and four months. Confirmatory factor analysis does not support the 15-factor structure. Substantial degree of positive inter correlation found between the scales, thus the distinctiveness of the scales is questionable
---	--------------------------------	---	--	--

Empathy	High correlations found between the EQ-I and the SCL-90, a measure of psychopathological symptomatology.
Interpersonal relationship	
Social responsibility	
	Disturbingly high correlations between the EQ-I scales and five-factor personality sub-scales.

Adaptation

Problem solving

Reality testing

Flexibility

Stress management

Stress tolerance

Impulse control

General mood

Happiness

Optimism

Mayer, Salovey and Caruso Emotional Intelligence Test (MSCEIT version 2.0)

A 141- item ability measurement of emotional intelligence

Perceiving emotions (*Measured with faces and pictures*)

The reliabilities of the MSCEIT V2.0 scale and sub-scales are far from optimal.

Proceeded by the ability measurements of MSCEIT version 1.1 and before that, the Multi-factor Emotional Intelligence Scale (MEIS).

Using emotions to facilitate thought
(Measured with sensations and facilitation tasks)

MSCEIT version 2.0 measures four branches of abilities.

Understanding emotions
(Measured with blends and changes tasks)

Mayer, Salovey, Caruso, and Sitarenios (2003)

Managing emotions (*Measured with emotion management and emotional relationship tasks*)

Mayer et al. (2003)

They emphasise that they are not being judged as (overly) emotional. Bar-On (2002) hypothesises that those individuals with higher than average EQs are better able to meet environmental demands and pressures and therefore adjust strongly with regard to impulse control in their work environment.

2.6.3. Ethnicity

In recent years, emotional intelligence and emotional intelligence measures have been used in a plethora of countries and cultures. Emotional intelligence foster the preservation of social harmony in collectivistic cultures but facilitate autonomy in individualistic cultures (Libbrecht, Beuckelaer, Lievens, & Rockstauhl, 2014). According to Marembo and Chinyamurindi (2018) ethnicity background and/or nationality has been found in social studies to corroborate differences in beliefs, values and disturbance handling processes and at a time of globalisation and growing diversity, understanding how nationality and ethnicity backgrounds affect employees' well-being, decision making and productivity is important. In one cross-cultural study, EI differences were observed in terms of the respondents' nationality, which was concluded and proved that EI competencies varied significantly across three ethnic groups in Indonesia.

However, Hossein (2015) in his doctoral thesis on leaders carried out a quantitative analysis of the relationship between EI and nationality. The result showed no significant differences in the trait EI and the nationality of the interviewed leaders. Robertson (2010) also found no significant relationship between EI and the ethnicity of respondents in an urban school. The reason may be that those from different ethnic groups employed in the school could have been endowed with rich adaptability competencies to work in diverse cultures.

2.6.4 Marital status

Madahi and Samadzadeh (2013) conducted a study, which shows the significant difference between single and married individuals in EI. Aspects considered were Self-Regard (SR), Empathy (EM), Social Responsibility (RE), Impulse Control (IC), Self-actualisation (SA), Reality Testing ((RT), optimism (OP), happiness (HA) married individuals' scores in self-regard (SR), empathy (EM), social responsibility (RE), Impulse Control (IC) and Self-Actualisation (SA). Results were higher for single

individuals than married individuals. In addition, EI single individuals' scores in optimism (OP) and happiness (HA) were higher than married individuals were. Therefore, it seems that marriage and marital factors in people led to more growth of aspects of EI. Madahi and Samadzadeh's (2013) study is compatible with one conducted by Fernández-Berrocal & Extremera, 2006 and Souri and Hasanirad, (2011) (Souri & Hasanirad, 2011) who showed that EI is a positive and significant predictor of life satisfaction in married people.

2.6.5 Qualifications

According to Stami, Fernandez and Parrish (2018) qualifications have been identified as another demographic factor that influences EI. In a study undertaken on 212 professionals working in a mental health, setting there was a statistically significant correlation between EI and educational levels, with those who had higher levels of education demonstrating greater EI.

2.6.6. Job Experience

According to Kumar and Muniandy (2012), having prior working experience in the industry did not have any significant effect on the level of EI. This might be due to unknown years of working experience in the respective industry and positions they held prior to working as a lecturer. Empirical studies in this area such as by Penrose, Perry, and Ball (2007) claim that the relationship between working experience and occupational grade with EI remains unclear.

2.6.7. Job Title

Stami, Fernandez, and Parrish (2018) conducted a study on demographic predictors of emotional intelligence on radiation therapists and found that the EI sociability dimension was greater among those with high level of employment. Explanations for this result could be due to the fact that confidence and experience, both of which it is reasonable to assume are gained as a consequence of higher levels of employment and education, are going to enhance ones' sociability. Furthermore, the radiation therapist's environment of teamwork and close affiliations within the multidisciplinary team require the skills of sociability, so these will logically be increased because of

their regular and ongoing employment in more senior roles (Stami, Fernandez, & Parrish, 2018).

2.7 PRACTICAL APPLICATION OF EMOTIONAL INTELLIGENCE

2.7.1 Practical application of Emotional Intelligence within the fire service

According to most studies, which were previously conducted the leading cause of death for firefighters are heart attacks, and not physical injury. Various prevention methods have been identified and put in place, but deaths have not decreased over the years; to the contrary, stress levels have increased (Carlisle, 1999). This lack of improvement confirms the need for new strategies that promote wellness, awareness, and effective personal reactions to incident-related stress. Firefighters are chronically exposed to traumatic events. Relatedly, past work has documented high rates of psychiatric problems, such as posttraumatic stress symptoms and depression, among firefighters, (Paulus, Gallagher, Bartlett, Tran, & Vujanovic, 2018).

As indicated previously firefighting is a high-risk, stressful profession. Firefighters and paramedics suffer from job stress, burnout, and retention issues, due to the very nature of their work. They are required to respond immediately at all hours to emergencies, risk their lives in dangerous situations, deal with the loss of people they could not help, be exposed to death and destruction, and handle interactions between stressed, ill and angry people, amongst other incidents. Although they are carefully trained in standard operating procedures, they are often not prepared emotionally to deal with all the aspects of unknown situations, or the lingering after-effects of stress (Guidotti, 1992).

In addition to dealing with dangerous incidents, there are major concerns within the profession including worker shortages, budget constraints, lack of specialised equipment and training, complexity of incidents, high levels of stress and burnout, increased terrorist and active shooter events, communication and relationship issues, health concerns and ageing (Carlisle, 1999). It has been proven that heart attacks for firefighters are also significantly higher than for police and construction workers. They are: firefighters 44%, guards 22%, police 15% and of other occupational fatalities, 10% for construction trades and only 10% of construction labourers. These facts highlight that firefighter rescuers need more protection from emotional stress

before, during and after an event. EI has been shown to reduce stress, improve decision-making skills, promote effective communication, and reduce burnout, increase job satisfaction and retention among emergency workers (Carlisle, 1999).

Concerning wellness in the fire service includes the control, diffusion, and management of firefighter stress reactions, research has shown that when firefighters learned to manage their stress they showed better physical and psychological wellness, higher morale, and less absenteeism (Carlisle, 1999). There is a growing recognition in business that highly successful people are not just technically competent, they possess special people skills, or EI. Carlisle (1999) further indicates that anxiety and increased emotional arousal can cause a firefighter to be highly irritable, show anger, or suffer from insomnia; other symptoms of stress include greater chance of cancer, viral infections, weaker immune systems, depression, myocardial infarction, ulcers, diabetes, and asthma. By contrast, learned optimism applied through the use of EI has a subtle healing power, resulting in faster recovery or reduction in symptoms.

2.8 CRITICAL REVIEW OF EMOTIONAL INTELLIGENCE

Zeidner, Matthews and Robert (2004), conducted a study, which critically reviews conceptualisations and empirical evidence in support of EI and its claimed role in the occupational environment. The review demonstrates that previous research has made important strides understanding the usefulness of EI in the workplace. (Zeidner et al., 2004) further explain that the ratio of hyperbole to hard evidence is high, with over-reliance in the literature on expert opinion, anecdotes, case studies, and unpublished proprietary surveys. Moreover, the review concludes by providing a number of practical guidelines for the development and implementation of EI measures within the occupational settings.

EI is a relatively a growing area of behavioural research having caught the imagination of the public, the commercial world, and the scientific community. According to Bhullar and Schutte (2018), emotional intelligence consists of interrelated competencies relating to perception, Understanding, utilizing, and managing emotions in the self and others

The concept resonates with a current zeitgeist emphasising the importance of self-awareness and understanding, redressing a perceived imbalance between intellect and

emotion in the life of the collective Western mind (Zeidner et al., 2004). EI also connects with several cutting edge areas of psychological science, including the neuroscience of emotion, self-regulation theory, studies of metacognition, and the search for human cognitive abilities beyond academic intelligence (Zeidner et al., 2004). The concept of EI was brought into the mainstream of psychology, in the 1990s by Mayer, Salovey and colleagues. They argue that EI incorporates a set of conceptually related psychological processes involving the processing of affective information (Mayer et al., 1999; 1997). These processes include the appraisal and expression of emotions, assimilation of emotions in thoughts, understanding emotion, the regulation and management of emotions.

The popular interest in EI has at times tended to obscure definitional clarity. The emerging literature on EI contains disparate terminology, including not only EI, but also emotional literacy, emotional quotient and personal intelligences, (Zeidner et al., 2004). Goleman (1998) appears to define EI by exclusion: as any desirable feature of personal character does not represent cognitive intelligence. Goleman further suggests that two domain facets define the competencies associated with EI: ability-awareness versus management of emotion and target-whether competence relates to self-versus others (Zeidner et al., 2004).

The most widely accepted scientific definition of EI is the “ability to monitor one owns and others emotions, to discriminate among them and use the information to guide one’s thinking and actions (Salovey & Mayer, 1990). This definition identifies emotional information processing as a necessary precursor of emotional regulation and as was argued elsewhere, probably constitutes the most workable contemporary definition of EI (Zeidner et al., 2004). According to Bar-On (1997) emotional intelligence is characterised as an array of non-cognitive capabilities, competencies, and skills that influence one’s ability to succeed in coping with environmental demands and pressures.

According to (Bar-On, 2010) EI should be considered an integral part of positive psychology, and further mentioned a number of empirical findings that support this notion. These findings demonstrate that emotional intelligence has a significant impact on human performance, happiness, well-being and the quest for meaning in life, all of which are the focus of interest in positive psychology.

2.9 RELEVANCE OF EMOTIONAL INTELLIGENCE WITHIN FIRE SERVICE DEPARTMENTS

Wagner and Martin (2012) describe firefighting as a physically and psychologically demanding profession with many inherent risks, including the development of mental health symptoms. Only a small body of literature has investigated the role of cumulative and/or secondary stress in the development of PTSD, and is even less focused on coping-related factors such as EI and proactive coping (Wagner & Martin, 2012).

As indicated previously EI is the ability to motivate oneself and persist in the face of frustrations, to control impulse and delay gratification, to regulate one's moods and keep distress from swamping the ability to think, to emphasise and to hope (Goleman, 1998). (Wagner & Martin, 2012) conducted a study on "can firefighters' mental health be predicted by emotional intelligence and proactive coping?" of which the results indicated that firefighters differed from a similar comparison sample when considering the types of self-reported mental health symptoms that could be predicted from EI.

The results were consistent with their hypothesis that firefighters higher in EI would self-report lower levels of traumatic stress symptomology. Given that firefighters are regularly exposed to traumatic events, the description of EI seems fitting. These service members would be required to persist in the face of frustration, control impulses, regulate mood, and maintain clear thoughts and hope in order to effectively meet many regular high stress, high risk job demands (Wagner & Martin, 2012).

Wagner and Martin (2012) further mention that their results suggest that strong EI may be a protective factor for firefighters who are regularly exposed to traumatic stimuli; in addition traumatic stress was the only variable, which predicted EI for the firefighters. This finding suggests that perhaps firefighters employ their most effective coping method for their most troubling emotional turmoil.

2.10 CHAPTER SUMMARY

This chapter focused on definitions of EI, an overview of the concept EI and the conceptualisation of EI. The different models were presented and how EI is measured

and lastly research was shared on how emotionally intelligent firefighters can contribute within the fire service departments. EI was identified as a crucial factor in effective service delivery. This chapter addressed the following specific literature review aims of the research. The aims were to:

- conceptualise the construct of emotional intelligence amongst firefighters in a metropolitan municipality from a theoretical perspective; and
- determine theoretically the role of the biographical variables (age, gender, ethnicity, marital status, qualifications, job experience and job title) in respect of emotional intelligence amongst firefighters in a metropolitan municipality.

The next chapter focus on occupational stress and how it is linked to EI.

CHAPTER 3

OCCUPATIONAL STRESS

3.1 INTRODUCTION

A brief overview of stress, the conceptual foundations of occupational stress, occupational stressors, individual characteristics and sources of occupational stress and the critical review of occupational stress experienced by firefighters within the metropolitan municipality are discussed and finally the chapter summary is provided.

3.2 A BRIEF OVERVIEW OF STRESS

According to Nevid, Rathus and Greene (2009) the term stress refers to the pressure or force placed on an organism to adapt or adjust. Stress is often described as a feeling of being overwhelmed, worried or run-down; stress can affect people of all ages and is often accompanied by uncomfortable “emotional experience which causes biochemical, physiological and behavioural changes” (M.K.Loo*, 2015). Stress can further be defined as a physiological and mental reaction to any challenge or stimulus which results in a disturbance or imbalance of the mind-body complex (Plessis & Smith, 2013).

According to Cilliers and Flotman (2016), the 21st century world of work is known for its increasing levels of stress, caused by the demands of the new economy, continuous change, transformation, globalisation, complexity, uncertainty and alienation. Non-coping with these demands results in negative stress, or distress, manifesting among employees as negativity, poor decision-making, emotional alienation, ineffective process and people management, and an increase in autocratic and bureaucratic leadership. Nevid, Rathus and Greene (2008) further state that a stressor is a source of stress which includes psychological factors, such as examinations in school and problems in social relationships, life changes such as the death of a loved one, divorce, or job termination. Stress that is prolonged or intense can overtax our coping ability and lead to states of emotional distress, such as anxiety or depression, and to physical complaints such as fatigue and headaches.

According to Butler (2018), it has been reported that as much as 90 percent of the doctor's visits are said to be stress-related. Nearly 50 percent of American workers experience stress. In addition, stress is expensive. It cost businesses more than \$300 billion in lost productivity last year. Managers need to be able to recognize stress in their employees. Some companies have begun to use stress audits to assist in this identification of stressors

3.3 CONCEPTUAL FOUNDATION OF OCCUPATIONAL STRESS

3.3.1 Occupational stress

According to Pološki Vokić and Bogdanić (2007) occupational stress is an inability to cope with the pressures in a job, because of poor fit between people's abilities and their work requirements and conditions. It is a mental and physical condition, which affects an individual's productivity, effectiveness, personal health and quality of work. Loo (2015) defines occupational stress as the harmful emotional and physical reactions that occur when the worker cannot fulfil the requirements of the said job/occupation. According to Prasad and Vaidya (2018), Occupational stress is a situation wherein job related components that communicate with an employee to change his/her conscious mind conditions resulting in an employee moving away from normal functioning. Work stress is an unpleasant physical and emotional stress response that occurs when there is misfit between demands of the work and capacity and resource requirements of an employee.

Occupational stress is regarded as both a serious public health concern and a major impediment to organisational success. In human terms, chronic job stress is associated with a range of physical (e.g. sleep deprivation), psychological (e.g. depression), social (e.g. interpersonal conflict), behavioural (e.g. alcohol and other drug abuse) and health problems. For organisations, occupational stress can contribute to a number of outcomes which are critical to organisational success, including absenteeism, labour turnover and job performance (Noblet, 2003).

The human and economic costs of job stress strongly suggests that it is in everybody's interests, employees, employers and the community at large, that steps be taken to build healthier and less stressful working environments (Noblet, 2003). Occupational stress is still one of the most researched topics investigated, because of the negative

impact and effects it has on the individual and organisational well-being. (Solutions, 2013) refers to occupational stressors as hindrance stressors which involve harm and are considered unfavourable, useless and threatening to personal goals and which are detrimental to various work outcomes.

Occupational stress is related to many problems organisations encounter on a daily basis, for example lack of commitment, which leads to poor performance, absenteeism, inadequate turnover, drug and alcohol abuse, which can lead to more errors and accidents in the workplace. The earlier study on sources of stress in the workplace in Malaysia found that there are numerous other unmeasured variables that can contribute to stress in the workplace (Taap Manshor, Fontaine, & Siong Choy, 2003). These include individual and family factors, socio-economic and financial status, and mental and physical health factors.

Another study was conducted which examined occupational stressors and well-being for blue and white collar occupations with Chinese and Hong Kong samples which demonstrated that occupational stressors play a significant role in determining job satisfaction, mental and physical well-being (Siu, 2002).

The unprecedented rapid growth interdependence of capital, trade and the labour market is considered a core feature of economic globalisation. Despite its benefits and effects on economic growth and social development, economic globalisation carries the risk of reducing the health and well-being of sizeable parts of working populations due to increased levels of work stress (Siegrist, Wege, Pühlhofer, & Wahrendorf, 2009).

Siegrist et al. (2009) further mention that most often, psychosocial stress at work is experienced as a result of challenges from a demanding environment that are difficult to meet and thus, due to the threat of failure, evoke intense negative emotions alerting physiological responses. As indicated earlier most people in the 21st century are threatened by psychological stress more especially in the workplace, which has detrimental effects on the growth of the economy in any country. An investigation was conducted in South Africa, which indicates that occupational stress creates an emotional climate that can be transmitted to the home and affect the dynamics of family life. Work stress affects not only the employee, but spills over and influences

other people with whom the individual interacts, such as spouse and children, Work stress has been related to marital relationships, parenting and psychological adjustment (Van Zyl, 2002). Van Zyl (2002) further mentions that it seems that stress and related health problems result in great costs within organisational contexts; each year corporations are forced to allocate a large share of their operating expenses just to provide employee health benefits resulting in higher consumer prices or lower profits, or both.

3.3.1.1 Individual characteristics of occupational stress

According to Pološki Vokić and Bogdanić (2007) personality traits and demographic characteristics are referred to as individual-related stressors which contribute to the causes of occupational stress. Demographic characteristics, which have proven to relate to someone's job stressor/health relationships include age, gender, marital status, educational status and job tenure.

3.3.1.1.1 Personality traits

Individuals have certain features, which make them unique but all the other features, which are similar to other people, make them to have personality traits. Personality traits can be defined as stable characteristics of the individuals' personality, make-up patterns of thinking, sensing and conduct (Gramstad, Gjestad, & Haver, 2013). According to Pološki Vokić & Bogdanić (2007) the personality variables that have been linked to stress include locus of control and self-esteem, type A behaviour patterns, hardiness and negative affectivity. Personality research has shown that certain personality traits can cause individuals to be more prone to stress. Type A personalities tend to be more competitive, more impatient, have time urgency when compared to more relaxed and laid back type B's.

3.3.1.1.2 Demographic characteristics

The influential characteristics embracing age, gender, ethnicity, marital status, qualifications, job experience and job title are briefly elucidated next.

Age

Previous research was conducted which investigated occupational stress, job satisfaction and job performance and the results indicated that the older age groups, 40-49 and 50 years and above reported the highest stress scores. These older individuals experienced more job stress because of social responsibilities such as caring for family members and a probable lack of support (Nabirye, Brown, Pryor, & Maples, 2011).

Gender

Michael et al. (2009) examined gender differences in experiencing occupational stress and the results indicate that women appear to experience significantly higher levels of occupational stress. The higher stress levels reported by women are related to the multiple roles that women are expected to play. Many women have at least four different roles to play: mother, employee, wife and a housekeeper. Multiple role demands are often incongruous and contradictory, lead to various forms of strain, such as lack of emotional and domestic support from partners, and guilt due to high expectations in each role and inadequate social and family support. Michael et al. (2009) further assert that even though multiple roles represent a source of stress for both employed women and men, working women typically spend more time on work and family activities than men, and carry a heavier load of responsibilities than men.

Ethnicity

According to Wadsworth, Dhillon, Shaw, Bhui, Stanfield, and Smith (2006), ethnic minorities experience particular negative work environments, which can lead to stress, and that the pattern of long-term illness among those of working age varies with ethnicity. Furthermore, there is a large literature on ethnicity and mental health. However, there is very little UK information about work stress and health in different ethnic groups. A recent review of ethnic minorities' occupational health and safety identified the lack of evidence on ethnicity and work-related health issues as a research priority.

Marital Status

In terms of marital status, married employees tend to experience more stress due to the fact that they have to balance the work and family life. They have to fulfil all commitments equally at home and in the workplace. Nagaraju and Nandini (2013) indicate that non-working married women are better adjusted in their married life than married women. In the same vein, they also do not feel depression and stress in their married life as compared to working married women; the critics also concluded that on some aspects working married women cannot contribute significantly for the well-being of their family. Their attention is diverted, because of working in two situations – they cannot pay proper attention to their marital lives and this causes depression and stress.

Qualifications

It has been suggested that people with higher education are more optimistic and have more resources to cope with stressful situations than people coming from a lower socio-economic status and with a lower level of education. People with a lower level of education do not earn as much as their qualified counterparts. Financial prosperity is also associated with advanced qualifications (Michael et al., 2009).

Job experience

Nabirye et al. (2011) indicate that employees who worked for more than ten years often seek promotion or advanced opportunities, and are interested in becoming involved in decision and policymaking at their workplace or receiving recognition for good work – if they do not they tend to be less satisfied with their jobs and experience more strain at work. The employees who had worked for more than twenty years reported to have the highest levels of occupational stress.

Job title

During the past few decades, there has been increasing interests on detecting important factors creating stress among employees. There is no doubt that when we reduce stress among workers, they could contribute more on society and they feel that they have a better life-style. As a result, society will record fewer numbers of criminals and there

is a better life conditions for everyone. Literally, there are various factors, which create stress among workers such as the lack of job security, stress created on behalf of management team, etc. Nevertheless, understanding the nature and root of stress in organizations helps us reduce its influence using appropriate methods (Iravani, Iravani, Iravani, Khorvash & Mosavi, 2012). Iravani et al. (2012) further mentioned that there are no meaning differences among people with different job titles.

3.3.2 Occupational stressors

The changing conditions that trigger stress are called stressors. Stressors are countless, varied and change over time. They are normally events or conditions that introduce some functional change in the organism's internal system or external environment (Couper et al.). Siu (2002) mentions that (Cooper, Sloan, & Williams, 1988) Cooper, Sloan and Williams (1988) developed the occupational stress indicator (OSI) which demonstrates that stressful transactions are as seen as a product of two intervening systems: people both exert an impact on and respond to their environments. In other words, the process of stress depends on the person's role in appraising the situation, which is what determines whether the situation is a stressor or not.

Stress occurs when a magnitude of the stressor exceeds the individual's capacity to resist, for instance workload is a stressor or something that causes people to feel stressed when they think that they are unable to cope with the large workload, (Siu, 2002). Six sources of stress, or occupational stressors were categorised in the OSI: factors intrinsic to the job, management role, relationship with others, career and achievement, organisational structure and climate, and homework interface.

Oosthuizen and Koortzen, (2007) indicate that the causes of the stressors arising outside the work situation were characterised by marital dysfunction and divorce, limited time with family, problems with children, and lifestyle factors such as the abuse of alcohol, excessive smoking and lack of exercise. They also mention the causes of stressors originating within the work situation manifested in terms of tasks characteristics, organisational functioning, physical working conditions and job equipment, career and social matters, remuneration, fringe benefits and personnel policy. The degree of shift work, overloading, under loading and traumatic incidents were flagged as main task characteristics stressors (Oosthuizen & Koortzen, 2007).

3.4 CRITICAL REVIEW OF OCCUPATIONAL STRESS

This section focuses on the critical issues that were covered pertaining to the concept of occupational stress. Loo (2015) posits that occupational stress is a global issue in modern life; it has been defined as an unpleasant or negative experience. Many organisations are increasingly concerned about employee stress, since it affects the productivity of their business. Occupational stress is becoming more complex in many industrial countries.

Occupational stress research encompasses a very large and diversified field, yet the areas sometimes remain relatively distinct. According to (Peterson, 1994) numerous studies and conceptualisations of the effects of negative work factors on stress but very few have placed the experience of stress in a comprehensive framework. He further mentions that psychological approaches are presented and critically appraised as having several drawbacks, while it is argued that sociological approaches are essential in explaining the context of occupational stress (Boxer & Wild, 1993).

Wainwright and Calnan (2002) assert that occupational stress is a contradictory category, meaningful to most people living and working in Western industrial societies, but at the same time subject of ambivalence and contested claims. For many people (both lay and researchers alike), work stress indicates the ‘natural’ limit of human endurance and resilience, a product of the unsustainable pressures and demands placed on the theories. Furthermore, occupational stress is the phenomenal form taken by antagonistic production relations in Western society at the same time. It is important to note that this phenomenal form is not a myth or an example of “false consciousness” – problems at work are really experienced as a threat to health and well-being.

Because of global changes in the nature of work, people in developing countries have to deal with increasing work-related stress; in industrialised countries people are becoming more familiar with what work-related stress is and how to manage it, however in developing countries like South Africa this may not be the case (Houtman et al., (2007). Houtman et al. (2007), further state that although some research has been conducted in developing countries, particularly in Latin America, there are still not enough in-depth studies to fully elucidate both the cultural differences and

behaviours which vary from one country to another. Along with the existing difficulties in controlling other more well-known occupational risks, there is a lack of awareness of work-related stress, and shortage of resources to deal with it. Cultural aspects may need some attention when dealing with work-related stress.

3.5 THEORIES OF OCCUPATIONAL STRESS

Although there are different theories in terms of the influence and the measurement strategies of occupational stress, and various perceptions of current methodologies about occupational stress, it is essential to understand the depth of stress experienced and the type of evidence it provides in terms of work stress and well-being. Dewe, O'Driscoll, and Cooper (2012) adopted theories and their own particular focus was generally structured around a common set of components that are basically linked together in a relationship that is process-oriented. There are numerous psychological theories of stress. They embrace: The Transactional model of stress, Person-Environment Fit, The Sources of Work Stress Inventory, and finally the Demand-Control-Support theory (DCS) and Effort-Reward imbalance reward theory (ERI).

3.5.1 Transactional model of stress

The transactional model defines stress as arising from the appraisal that particular environmental demands are about to tax individual resources, thus threatening well-being. The model of stress encompasses a number of themes that capture the transactional nature of stress and those that best express the nature of that transaction. These themes involve the following (Dewe, O'Driscoll, & Cooper, 2012):

- Stress is the product of the transaction between the individual and the environment; and
- The authority and power of the transaction lies in the process of appraisal that binds the person and the environment and it is a relational meaning, which the person constructs from the transaction and it lies at the heart of the stress process.

3.5.2 Person-environment fit

According to Dewe et al. (2012) this account of the stress process stems from the early work and theorising of Lewin (1935) and Murray (1938). Lewin conceptualised the interaction between the person and the environment (PXE) as the key to understanding people's cognitive, affective and behavioural reactions. His early thinking therefore provided the foundation for the modern perspective of P-E fit. In particular, he foreshadowed the notion that optimal fit between the people and their environment is needed for effective human functioning. This P-E theory postulates that high strain will occur, when there is a mismatch between the people's needs, and challenges they face at work.

3.5.3 The Sources of Work Stress Inventory

The Sources of Work Stress Inventory (SWSI) was developed in order to provide a measure of occupational work stress that not only determines a general level of stress, but also identifies possible key sources of stress (De Bruin & Taylor, 2005). According to De Bruin and Taylor (2005), the SWSI appraises eight sources of work stress, namely Role Ambiguity, Relationships, Tools and Equipment, Career Advancement, Job Security, Lack of Autonomy, Work/Home Interface and Workload. The SWSI will be applied in this study.

3.5.4 Demand-control-support theory

This theory predicts that high levels of job demands (external pressures and work overload), low levels of the job control (over events, and chance to use skills) and low levels of social support (from supervisors, colleagues, feedback) are associated strongly with negative health outcomes. This theory further predicts interactions between demands and control, and demands and social support so that control and support will buffer the negative effect of job demands on health outcomes (Mark & Smith, 2012).

3.5.5 The effort-reward imbalance

The effort-reward imbalance theory predicts that high levels of extrinsic effort (from external pressures) and intrinsic effort (internal motivations/work "over

commitment”) and low levels of reward (pay, job security, and recognition and promotion prospects) will significantly predict negative health outcomes. Reward is predicted to buffer against the negative effect of efforts on health outcomes.

3.6 OCCUPATIONAL STRESS MODEL

The job stress and health model proposed by Hurrell and McLaney (1988) provides an overarching framework for understanding how adverse health outcomes may be tied to work-related factors. Based on evidence from the occupational stress literature, the model identifies multiple sources of stress in the work environment. The stress factors embrace the physical environment, role conflict, role ambiguity, job control, interpersonal conflict, workload, responsibility for people, underutilisation of abilities, cognitive demands and shift work. In addition, another unique aspect of this model is the recognition that exposure to physically threatening or hazardous situations can also be a source of stress to workers (Huang, Feuerstein, & Sauter, 2002).

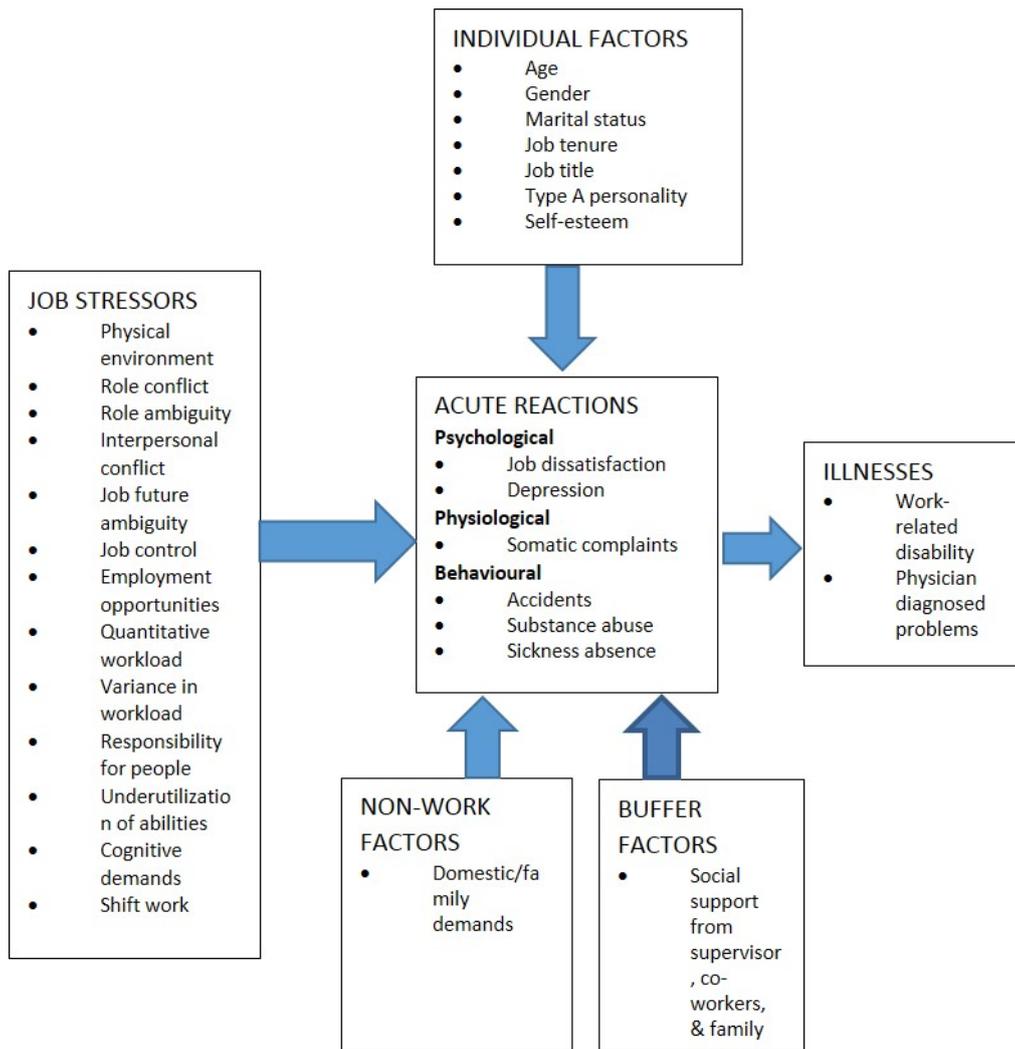


Figure 3.1: Occupational Stress Model (Hurrell & McLaney, 1988)

3.7 CHARACTERISTICS OF OCCUPATIONAL STRESS

Robbins, Judge, Odendaal, and Roodt (2009) identify three characteristics of stress namely, Individual, organisational, and environmental characteristics.

3.7.1 Individual characteristics that contributes to occupational stress

The typical individual works about forty to fifty hours per week, but the experiences and problems that people encounter in those other 120 plus non-working hours each week can spill over to the job. This encompasses factors in the employee's personal life, primarily family issues, personal economic problems and inherent personality characteristics. Stress symptoms expressed on the job may actually stem from the person's personality (Robbins et al., 2009).

3.7.2 Organisational characteristics that contribute to occupational stress

According to (Robbins et al., 2009) characteristics of stress within an organisation that can cause stress include the following:

3.7.2.1 Task demands which relate to a person's job

They include the design of the individual's job (autonomy, task variety, degree of automation), working conditions and the physical work layout, e.g. working in an overcrowded room or in a visible location where interruptions are constant can increase anxiety levels and stress.

3.7.2.2 Role demands relate to pressures placed on a person

Role demands relate to pressures placed on a person as a function of the particular role they play in an organisation. Role conflicts create expectations that may be hard to reconcile or satisfy. Role overload is experienced when the employee is expected to do more than the time permits. Role ambiguity is created when role expectations are not clearly understood and the employee is not sure what they are to do.

3.7.2.3 Interpersonal demands

Interpersonal demands are pressures created by other employees. Lack of social support from colleagues and poor interpersonal relationships can cause considerable stress especially among employees with high social needs. The degree and variety of social needs vary among people.

3.7.2.4 Organisational structure

The organisational structure defines the level of differentiation in the organisation, the degree of rules and regulations, and where decisions are made. Excessive rules and lack of participation in decisions that affect an employee are examples of structural variables that might cause stress.

3.7.2.5 Organisational leadership

Organisational leadership represents the managerial style of the organisation's senior executives; some executives may create a culture characterised by tension, fear and

anxiety. Some may even establish unrealistic pressures to perform in the short run, impose excessively tight controls and routinely fire employees who cannot meet the requirements.

3.7.3 Environmental characteristics

Just as environmental uncertainty influences the design of an organisation's structure, it also influences stress levels amongst employees in any organisation. Changes in the business cycle create economic uncertainties. Political uncertainties may have an impact on the market stability, which will affect not only employees directly involved, but also their friends and families. Technology can also cause stress, because innovations can generate employees' skills and experience obsolete in a very short period of time.

3.8 PRACTICAL APPLICATION OF OCCUPATIONAL STRESS

3.8.1 Practical application of occupational stress within fire service departments

The discussion will focus on how occupational stress experienced by firefighters affects the fire service departments. Firefighter injuries have a tremendous negative impact on fire departments, individual firefighters and taxpayers each year. Fire departments recognise the need to maintain fire apparatus to ensure that vehicles operate properly. For most departments, this is one of the largest line items in the annual budget (NFPA, 2010).

According to a study conducted by (Kuehl et al., 2013; NFPA, 2010)) about 80,000 U.S. firefighters are injured each year. It is estimated that firefighter injuries cost billions of dollars annually. Costs are attributed to workers' compensation payments and other insured medical expenses, long-term care, lost productivity, the administrative costs of insurance and other factors. The following abstract from the 2010 firefighter injury report from the National Fire Protection Association (NFPA, 2010) reveals that:

(NFPA, 2010) estimates that 71,875 firefighter injuries occurred in the line of duty in 2010. An estimated 32,675 or two fifths (45.4%) of all the firefighter injuries occurred during the fire ground operations. An estimated 14,190 occurred during

other on duty activities, while 13,355 occurred during fire ground operations was strain, sprain or muscular pain (52.8%), followed by wound, cut bleeding, bruise (14.2%). Regionally, the Northeast had the highest fire ground injury rate (NFPA, 2010).

3.8.2 Practical application of occupational stress within the South African context

Previous research indicates that occupational stress (work stress) experienced by firefighters is well researched and broad in most developed countries whereas in South Africa little research is undertaken. Within the South African context operational incidents to which firefighters are exposed to vary considerably. Tasks performed by firefighters embrace firefighting tasks such as hose line operations, extensive crawling, lifting and carrying heavy objects, ventilating roofs or walls using power or hand tools, forcible entry, rescue operations, and other emergency response actions under stressful conditions. Some of these tasks are performed wearing heavy gear such as protective ensembles (PPE) and self-contained breathing apparatus when working in extremely hot or cold environments for prolonged periods.

In Cape Town firefighters are expected to work in ship fires where they will be exposed to extreme heat, poor visibility and stress in ship holds. Bush fires are also very common in the Peninsula often raging out of control for days, thus involving long working hours. A unique firefighting feature in Cape Town is informal settlements where numerous dwellings burn down and fire fighters are tasked with the gruesome and stressful task of recovering burned bodies. Other kinds of fires are those commonly found around the world, which includes factory fires with exposure to chemicals and explosive materials, hazardous material incidents, involving spills of acids, radio-active substances, flammable solids, gases and corrosives, accidents, collapsed buildings, bomb blasts and ordinary house or commercial premises fires.

Schmidt and Mckune (2012) assert that firefighting is a long-standing occupation and many departments in South Africa are not prioritising the health and fitness of their firefighters. Musculoskeletal injuries, overexertion and substandard physical fitness are major causes of injuries with on-duty firefighters. Many health and fitness models have been developed from the general population norms to provide practical recommendations for firefighters, unfortunately these models fulfil the needs of the

public and are not specific or fitting for firefighters' health and fitness. They further mention that the investigations have expressed the need for superior health and fitness to manage the typical job-specific tasks of a firefighter.

In order to cope firefighters are required to possess mental, sensorial and motor skills sufficient to perform these tasks under such difficult conditions safely and effectively. The ability to maintain mental alertness and the reliable judgment necessary to perform firefighting functions without posing a threat to oneself or others are of crucial importance. They also simultaneously need acuity of senses and an ability of expression to communicate accurately while using equipment. Firefighting also requires a high level of aerobic fitness, strength and good vision.

According to Steyn (2004) the greatest threat in the South African context to the delivery of an acceptable service is the uncontrolled expansion of the informal settlements that automatically becomes the responsibility of the emergency service departments. The responsibility is continuously increased, but the budget, equipment and manpower are not adjusted in direct proportion to the increased risk. Furthermore, the threat is the fact that the vehicles and equipment of the emergency services cannot keep pace with the demand of developing settlements or the technological development of the emergency services industry.

According to Steyn (2004) the emergency service industry suffers from a serious shortage of personnel in South Africa, affecting the quality of service to the community. In a new dispensation, finances are the greatest constraint and affect the total spectrum of the rendering of such a service. Facilities, equipment, vehicles and personnel call for available budgets. Facilities are deteriorating, vehicles are unserviceable and personnel numbers have decreased-in some cases as much as 40%. It is expected that the available money should somehow still enable delivery of the original quality service to the larger community.

3.9 CRITICAL REVIEW OF OCCUPATIONAL STRESS EXPERIENCED BY FIREFIGHTERS

Firefighters experience additional stressors on a daily basis in their work environment. According to Hildebrand (1984) there are five stressors unique to firefighters. These stressors are:

- Level of uncertainty: When most people go to work, they have some idea of what to expect; sales people know they will make sales calls, an order clerk expects to process orders and a teacher follows a lesson plan for the day. Many people have some degree of control over what the day's work will involve, whereas firefighters on the other hand do not know what their day's work will bring and they have little control over these unpredictable events;
- Physical response to an alarm: When an alarm sounds, firefighters' bodies prepare them for increased physical demands. If there is no fire or if a medical run produces little physical activity, the increased adrenaline, blood sugar levels, blood pressure and muscle tension remain. It may take several hours for these to drop to normal levels;
- Interpersonal tension: The crisis nature of firefighting tends to magnify tensions between people or organisational units – tensions that would be far less serious in a non-firefighting environment. Poor communications, faulty equipment or a lack of coordinated effort may be serious in an office, but can be dangerous or fatal on the fire ground.
- Exposure to human tragedy: The fire service takes pride in “running into buildings that everyone else runs out of.” The price of that pride however is being available when people lose their lives homes, families, and businesses; and
- Fear: Like most people, firefighters do not often talk about their fears. Nonetheless, firefighters have legitimate concerns for their own safety, for the safety of their peers and the impact of a possible mistake by themselves and others.

3.10 RELEVANCE OF OCCUPATIONAL STRESS WITHIN FIRE DEPARTMENTS

In 2015 firefighting has been rated as the most stressful job in the United States of America (Milen, 2009). According to (Milen, 2009) firefighting personnel experience stress each day in their work settings. Their ability to cope with stress affects their capacity to function effectively in emergencies. Milen (2009) further mentions that fire departments and the personnel working in those settings need to understand the stress involved and should identify and develop effective coping strategies.

With the advancement of fire prevention technology, such as flame-retardant building materials, smoke detectors, and sprinkler systems, fire departments are responding to fewer and fewer fire calls than ever before. However, for more than one million firefighters in the United States, firefighting is still considered a very hazardous and highly stressful occupation. Firefighters are at greater risk of injury and death than most other professions as the result of flames and intense heat, “poisonous, flammable, or explosive gases and chemicals, or radioactive or other hazardous materials” (Sweeney, 2014).

Research has shown that “forty-three percent of all adults suffer adverse health effects from stress” (Miller, 1995); however, it is the men and women in the emergency service professions that are at a greater risk of suffering long-term stress that can lead to post traumatic stress disorder (PTSD). The “rate for diagnosable PTSD among firefighters was 16.5 percent compared to a one percent to three percent rate for the general population – about one percent higher than PTSD rates of Vietnam veterans” (Harris et al., 2002). The International Association of Fire Chiefs’ Foundation (1991) has stated that:

Stress is one of the most serious occupational hazards in the fire service, affecting health, job performance, career decision-making, morale, and family life. Emotional problems, as well as problems with alcohol and drugs, are becoming increasingly evident. High rates of attrition, divorce, occupational disease, and injury continue... [And] suicide is a real and tragic alternative for some.

Volunteer firefighters comprise approximately 71% of all firefighters in the United States (NFPA, 2010). Most do not receive monetary compensation for their efforts. Most volunteer firefighters have full-time jobs in addition to their duties and responsibilities at the fire department. However, these firefighters are exposed to the same dangers, experience the same job-related stress, and must cope with grief just as their comrades in career (paid) departments. They fight fires, save lives, and protect property. Many are trained as first responders, emergency medical technicians, or paramedics. Some receive additional training in specialized areas, such as vehicle extrication, high-angle rescue, hazardous materials, confined space, and water rescue. Volunteer firefighters respond to major disasters, motor vehicle accidents, domestic violence and child abuse calls, and school shootings. They are placed in life-

threatening situations and many of them are victims of violence. Sadly, 100 firefighters die in the line of duty each year. The majority of these firefighters are volunteers (Karter & Stein, 2005).

Although some volunteer departments are in large cities most are in small, rural communities. Therefore, these emergency workers are often familiar with the victims, which exacerbates the level of stress. Furthermore, only ten to fifteen calls per year can be dealt with. These firefighters “may not be as regularly exposed to certain types of incidents and may not be as emotionally desensitized” (Sweeney, 2014), because of this, many volunteer firefighters in rural areas with few calls may find it just as difficult to cope with stress and grief as firefighters who respond to many calls in larger cities. Stress causes challenges and attrition in volunteer fire departments and smaller departments are suffering similar levels of stress even though they deal with a smaller number of cases (Sweeney, 2014).

3.11 THEORETICAL INTEGRATION OF OCCUPATIONAL STRESS AND EMOTIONAL INTELLIGENCE

Landa et al. (2008) conducted a study on EI, occupational stress and health in nurses, which has proven that nurses suffer from stress and health problems owing to the characteristics of their work and their contact with patients and death, which have an effect on work outcomes. EI may explain the individual differences in dealing with work stress.

Houtman et al. (2007) define health as the bio-and psycho-social well-being of the individual. With respect to the influence of EI on health, it is indicated that EI has a mediating role in the relationship between psychological health and stress. It was concluded that people with high EI are able to deal with environmental demands better than people who score low in this variable (Landa, López-Zafra, Martos, & del Carmen Aguilar-Luzón, 2008).

Factors that define perceived EI (attention to the emotions, emotional clarity and emotional repair) also have differential effects on health, strategies for dealing with stress and job satisfaction. For example, people who score high in the factor “attention to emotions” report more physical symptoms, depression and anxiety than individuals who obtain a low score in this factor, since the latter do not consider their affective

states relevant and they do not use that information to carry out effective regulation strategies (Landa et al., 2008).

Landa et al. (2008) further mention that high scores on clarity and emotional repair are related to lower anxiety and depressive symptoms and higher life satisfaction, in addition emotional repair is positively related to perceived physical and mental health, work satisfaction and to life satisfaction. With regard to the relationship between stress and burnout, it was concluded that emotional clarity and emotional repair are negatively related to stress.

3.12 CHAPTER SUMMARY

In Chapter 3 literature surrounding occupational stress in terms of the conceptual foundations, work stressors, theoretical perspectives, relevant model, and characteristics were discussed. The practical application of occupational stress, its critical review, and its relevance within the fire departments were also discussed. This chapter addressed the following specific literature review aims of the research. The aims were to:

- conceptualise the construct of occupational stress amongst firefighters in a metropolitan municipality from a theoretical perspective;
- conceptualise the implications of the relationship between EI and occupational stress amongst firefighters in a metropolitan municipality from a theoretical perspective;
- determine theoretically the role of the biographical variables (age, gender, ethnicity, marital status, qualifications, job experience and job title) in respect of occupational stress amongst firefighters in a metropolitan municipality.

Chapter 4 presents the empirical research.

CHAPTER 4

EMPIRICAL RESEARCH

This chapter focusses on the empirical part of the study, which outlines an overview of the study's population and sample; the measuring instruments followed by the limitations of these instruments. Lastly, the ethical issues and the administration of the psychometric battery are discussed.

4.1 DESCRIPTION OF THE POPULATION AND SAMPLE

4.1.1 Population

Population is the study object, which may be individuals, groups, organisations, human products and events, or conditions to which they are exposed (Welman & Kruger, 2001). This study was conducted in a metropolitan municipality, South Africa. The municipality has a total number of 21 fire stations, with a population of 846 firefighters. The fire departments operations are organised in a structure which is team-based and firefighters provide many essential public services as they interact a lot with victims and the community as a whole. Consequently, the emotional demands on firefighters have increased and the department was considered as an ideal population for the study of occupational stress and emotional intelligence.

4.1.2 Sample

According to Brynard, Hanekom, and Brynard (2014) a sample is a representative of the larger group (population or universe) and includes all the elements of the population. The metropolitan municipality comprises 21 fire stations and 846 firefighters. A non-probability sample of convenience of 150 respondents (N=150) was selected from the seven fire stations to voluntarily complete the questionnaires.

4.1.2.1 Distribution of the sample according to age

Table 4.1 below depicts that regarding age respondents were divided into six categories viz.: below 20 years, 21-30 years, 31-40 years, 41-50 years, 51-60 years and 60 years and above. The majority of the respondents (42%) were between the age

ranges of 31-40 years, followed by the category of respondents (33.3%) which was between ages 21-30 years.

TABLE 4.1: Frequency table of the age of the sample

	Frequency	%	Valid %	Cumulative %
Below 20 years	3	2.0	2.0	2.0
21 years - 30 years	50	33.3	33.3	35.3
31 years - 40 years	63	42.0	42.0	77.3
41 years - 50 years	25	16.7	16.7	94.0
50+ years	9	6.0	6.0	100.0
Total	150	100.0	100.0	

4.1.2.2 Distribution of the sample according to gender

Table 4.2 reveals that 65% respondents were males and 35.3% respondents were females. This provides an indication that more males participated in the survey as compared to females.

Table 4.2: Frequency table on the gender of the sample

	Frequency	%	Valid %	Cumulative %
Male	97	64.7	64.7	64.7
Female	53	35.3	35.3	100.0
Total	150	100.0	100.0	

4.1.2.3 Distribution of the sample according to ethnicity

Frequency Table 4.3 on the ethnic group of the sample presents the ethnic group of the participants; the participants were Asian, coloured, African and white. Most participants were African at 91% followed by whites at 4%.

Table 4.3: Frequency table on the ethnicity of the sample

	Frequency	%	Valid %	Cumulative %
Asian	3	2.0	2.0	2.0
Coloureds	5	3.3	3.3	5.3
African	136	90.7	90.7	96.0
White	6	4.0	4.0	100.0
Total	150	100.0	100.0	

4.1.2.4 Distribution of the sample according to the marital status

The distribution of the sample according to Table 4.4 depicts that the majority of the participants (68%) are married (100 respondents) and 50 respondents (33.3%) are unmarried.

Table 4.4: Frequency table on marital status of the sample

	Frequency	%	Valid %	Cumulative %
Married	100	66.7	66.7	66.7
Unmarried	50	33.3	33.3	100.0
Total	150	100.0	100.0	

4.1.2.5 Distribution of the sample according to the highest qualifications

The respondents' qualifications were identified as indicated in Table 4.5. The majority of the participants hold a matric certificate (57.3%), followed by those who hold national diplomas (29.3%) and BTech degrees (13%).

Table 4.5: Frequency table indicating the highest qualifications of the sample

	Frequency	%	Valid %	Cumulative %
Grade 12	86	57.3	57.3	57.3
National Diploma or B degree	44	29.3	29.3	86.7
BTech or Honours	19	12.7	12.7	99.3
Masters	1	.7	.7	100.0
Total	150	100.0	100.0	

4.1.2.6 Distribution of the sample according to job experience

Table 4.6 indicates that 59% of the respondents have been firefighters for 6-10 years; a further 19.3% for 1-5 years, some 11-15 (14%) and 16-20 years (4.7%), others 21-30 years (3.3%) and it was interesting to note that some respondents have been employed for 21+ years.

Table 4.6: Frequency table on the years of experience of the sample

	Frequency	%	Valid %	Cumulative %
1 year-5 years	29	19.3	19.3	19.3
6 years-10 years	88	58.7	58.7	78.0
11 years-15 years	21	14.0	14.0	92.0
16 years-20 years	7	4.7	4.7	96.7
21+ years	5	3.3	3.3	100.0
Total	150	100.0	100.0	

4.1.2.7 Distribution of the sample according to the job title

From the Table below 4.7, it is evident that the majority of the respondents are junior firefighters at 32% followed by the senior at 29% and leading firefighters at 26%. The commanders included the company commanders (13.3%) and (2.3%) was made up of the district commander, assistant fire chief as well as the fire chief.

Table 4.7 Frequency table on the Job Titles to the sample

	Frequency	%
Junior Firefighter	48	32.0
Senior Firefighter	43	28.7
Leading Firefighter	39	26.0
Commanders	20	13.3
Total	150	100.0

4.2 CHOOSING AND MOTIVATING THE PSYCHOMETRIC BATTERY

4.2.1 Bar-On Emotional Quotient Inventory (EQ-I 2.0)

The Bar-On Emotional Quotient Inventory-2.0 (EQ-I 2.0) is the measuring instrument for EI that was used. According to (S.J. & E., 2011) the emotional quotient inventory 2.0 (EQ-I 2.0) is a psychometrically sound, validated assessment instrument that is applied for emotional intelligence assessment and development at individual, team and organisational levels. The EQ-I 2.0 is one of the most advanced and thoroughly researched measures of EI.

4.2.1.1 Theoretical basis for the development of the Bar-On Emotional Quotient Inventory

According to the Multi-Health System (MHS) Inc (2011) the EQ-I 2.0 was developed by Dr Reuven Baron a clinical psychologist who worked as a senior consultant for a variety of Israeli institutions and organisations, which included the ministry of education, the foreign ministry, and the defence forces in Israel.

The EQ-I 2.0 was the result of many years of Dr Reuven's research on EI. His research has crossed borders into eleven countries in an effort to develop a cross-cultural approach to describe and assess EI. In association with Multi-Health Systems, he accumulated the final data for the standardisation of the EQ-I 2.0 in the United States and Canada.

The development of the EQ-I 2.0 over the years included the following:

- Identification of the key determinants of success;
- Clustering determinants of success into factors;
- Operationally defining these factors;
- Constructing the EQ-I 2.0;
- Examining the factor structure, reliability and validity;
- Validating the test across cultures; and
- Continuing research in particular criterion validation.

Dr Reuven Baron officially introduced the EQ-I 2.0 at the American Psychological Association's Annual Convention in Toronto, Canada in August 1996.

4.2.1.2 Rationale of the Bar-On Emotional Quotient Inventory

As previously indicated Bar-On's model defines the construct emotional-social intelligence, which is formed by a cross section of inter-related emotional and personality traits that are well established and interact together in the individual. Specifically, emotional and social intelligence comprises five high level factors that include intrapersonal skills, adaptability, stress management and general mood.

According to MHS Inc (2011), the original EQ-I first published in 1997, was the first commercially available empirically constructed test of EI. The EQ-i 2.0 is a product

of the continued evolution in the understanding of the concept of EI. The uniqueness of this questionnaire lies in the way it combines a comprehensive array of existing observations and theories, methodological strategies, research findings and multifactorial nature.

The essence of the EQ-I 2.0 resides in its conceptual framework, a framework that is based on the original EQ-I model (Bar-On, 1997) and continue to provide unique access into one's emotional and social functioning and well-being. The EQ-I 2.0 is regarded as the first step in the successful application of the tool and provides the basis for evaluation and interpreting the results.

The total EQ-I 2.0 gives a general indication and snapshot impression of the respondent's emotional and social functioning. The EQ-I 2.0 can be used for several purposes whether it be for the selection or development purposes and even cultural differences.

4.2.1.3 Scales of the Bar-On Emotional Quotient Inventory

According to the MHS Inc (2011), EQ-I 2.0 is made up of five composite scales and fifteen subscales; these subscales are the building blocks of EI. The composite scales are the high level categories that contain subscales and they all work together to impact emotional and social functioning and overall performance. The five composite scales of EI are discussed in the next sections.

4.2.1.3.1 Self-perception Composite Scale

When individuals understand themselves it becomes easier to express themselves confidently and better. It often leads to making good interpersonal relations with others. The subscales include **self-regard** (respecting yourself while understanding other's strength and weaknesses), **self-actualisation** (the willingness to persistently try and improve oneself and engage in the pursuit of personally relevant and meaningful objectives that lead to a rich and enjoyable life) and **emotional self-awareness** (recognising and understanding one's emotions).

4.2.1.3.2 Self-expression Composite Scale

According to the MHS, Inc(2011), self-actualisation is the willingness to be persistent in trying to improve oneself and engage in the pursuit of personal and meaningful objectives that lead to a rich and enjoyable life. The subscales include **emotional expression** (when openly expressing one's feelings verbally or non-verbally), **assertiveness** (communicating feelings, beliefs and thoughts openly and defending personal rights and values in a socially acceptable, non-offensive and non-destructive manner), and lastly **independence** (the ability to direct oneself and be free from emotional dependency on others. An individual can plan daily tasks and complete them autonomously).

4.2.1.3.3 Interpersonal Composite Scale

This facet of EI measures one's ability to develop and maintain relationships based on trust and compassion, articulate an understanding of another's perspective and act responsibly while showing concern for others. The subscales include: **interpersonal relationships** (the skill of developing and maintaining mutually satisfying relationships which are characterised by trust and compassion), **empathy** (understanding and appreciating how others people feel, putting oneself in other people's shoes), and lastly **social responsibility** (unselfishly contributing positively to society and generally to the welfare of others).

4.2.1.3.4 Decision Making Composite scale

The Decision Making Composite Scale addresses the ways in which one uses emotional information to make a decision. The subscales include **problem solving** (which involves the ability to find solutions where emotions are involved), **reality testing** (the capacity to remain objective by seeing things as they are), and lastly **impulse control** (the ability to resist or delay an impulse).

4.2.1.3.5 Stress Management Composite Scale

This composite scale addresses how well one can cope with emotions associated with change and unfamiliar or unpredictable circumstances, and it includes certain subscales. They are”

- **Flexibility:** being able to adapt emotions, thoughts and behaviours to unfamiliar, unpredictable and dynamic circumstances and ideas;
- **Stress tolerance:** being able to cope with a stressful or difficult situation and still believe or hope that everything will work out in the most positive manner; and
- **Optimism:** one's positive outlook on life, remaining hopeful and resilient despite occasional setbacks.

4.2.1.4 Administration of the Bar-On Emotional Quotient Inventory

According to MHS Inc, the EQ-I 2.0 consists of 133 brief items that have to be answered on a 5 point Likert response scale (never or rarely to always or almost always). It takes approximately 20 to 30 minutes to complete, but there are no imposed time limits. The reading level within the South African context is 6th grade and it is suitable for individuals 18 years of age and older. The online EQ-I 2.0 is available online through the EQ-I 2.0 portal assessment website and can be completed online or by using the printable forms, which are also available on the portal. In this study the researcher used the printable forms which the participants completed. Most of the respondents hold a senior matric certificate, and others hold post matric qualification. Thus, the questionnaire was suitable for the participants. They were all adults above 18 years of age.

4.2.1.5 Scoring and interpretation of the Bar-On Emotional Quotient Inventory

4.2.1.5.1 Multi-health Systems Inc. indicated how the EQ-I 2.0 scores are determined:

Raw scores are assigned to each EQ-I 2.0 response, for positively phrased items (e.g. "I keep calm in difficult situations", the scores are as follows: 1. =Never, 2= occasionally, 3=Sometimes, 4=Often and 5=Always/almost always.

For a negatively phrased items (e.g. "I cannot think clearly when I'm under stress) the assignment of scores is reversed.

Normal distribution

The scores for the EQ-I 2.0 norm groups closely resemble a "normal" or a bell-like distribution MHS Inc.

Standard deviation

The standard deviation allows a score to be plotted very precisely among the distribution of scores. The EQ-I 2.0 presents a client's results by using standard scores. Standard scores with a mean of 100 and a standard deviation of 15 are used.

4.2.1.5.2 Guidelines for the interpretation of EQ-I 2.0 Scores

According to MHS Inc. the EQ-I 2.0 has a 1-5 15 structure derived from theory and statistical analysis:

- The 1 represents the total EQ score
- The 5 represents the 5 composite scores
- The 15 represents the 15 subscale scores

The total score provides a general indication and snapshot impression of a respondent's emotional and social intelligence.

4.2.1.5.3 Interpretation of Standard Scores

EQ-I 2.0 scores are standard scores based on 100 as the mean, high and low scores are identified by how distant they are from the mean. Scores exceeding the mean or falling below the mean by one standard deviation (15 points) should be considered meaningful. The following table will provide a guideline of how to interpret the EQ-I 2.0.

Table 4.8: Standard Score: Guideline for Interpretation

STANDARD SCORE	GUIDELINE
130 and Over	Enhanced skills: A-typically well-developed emotional capacity
115 to 129	Enhanced skills Well-developed emotional capacity
86 to 114	Effective functioning: Typically, usually adaptive emotional capacity
70-85	Needs Improvement/ Area of enrichment Under-developed
Under 70	Needs Improvement/ Area of enrichment Markedly under-developed emotional skills

Knowledge of high and low scores helps individuals identify strengths and weaknesses in their current functioning. Scores around 100 in the middle range are achieved by the majority of respondents and indicate typical healthy functioning. Low scores identify skills that need to be improved to increase overall functioning. Very high scores on the EQ-I 2.0 should also be carefully interpreted.

The EQ-I 2.0 reports use the following categories to describe individual functioning

- Low Range: Scores below 90;
- Mid-range: Scores between 90-110; and
- High range: Scores above 110.

4.2.1.6 Reliability and validity of the Bar-On Emotional Quotient Inventory

The reliability and validity of the EQ-I 2.0 are discussed in the next sections.

4.2.1.6.1 Reliability of the Bar-On Emotional Quotient Inventory

MHS Inc. conducted two types of reliability studies: internal consistency and test-retest reliability. According to the MHS Inc. (2011) the overall EQ-I 2.0 demonstrates sound reliability, internal consistency (alpha) values were generally high for the overall normative groups and within specific age and gender subgroups, suggesting that the items cohesively measure total EI, as well as the constructs represented by the composite scales and subscales. The test-retest reliability and stability values were also high at both 2-4 week and 8 week intervals, reflecting a level of temporal stability that would be expected for EI.

4.2.2.6.2 Validity of the Bar-On Emotional Quotient Inventory (EQ-I 2.0)

The MHS Inc, (2011) conducted several analyses to examine the validity of the EQ-I 2.0. Content validity analyses suggest that all relevant facets of the Bar-On conceptualisation of emotional intelligence are being captured by the EQ-I 2.0. Exploratory factor analyses suggested that this overarching single factor (EI) may be combined into five correlated composite scales (i.e. α 1-5-15 Factor Model of emotional intelligence). Overall, the analyses suggest the EQ-I 2.0 is a valid measure of EI.

Although the instruments used were previously tested, in order to justify the reliability and validity of the instrument for this study, a reliability and validity analysis was performed.

4.2.1.7 Justification for the selection of the Bar-On Emotional Quotient Inventory

The Bar-On is arguably the best known assessment of emotional and social intelligence and its reputation is supported by extensive research, MHS Inc. (2011). The first phase of the Bar-On's research was done in South Africa from 1986 to 1993, and in January 2013 the South African norms for the EQ-I were released which makes this instrument more relevant to the South African context. The release of these professional norms provides the researcher the ability to score the respondents against data collected from South Africa. MHS Inc. (2011) collected data from 1200 South Africans and it was observed that South Africans tended to score higher than North Americans on the EQ-I 2.0 scales, however few meaningful differences were observed. The EQ-I 2.0 scores were found to be highly reliable in the South African sample and the factor structure that was developed in North America was replicated with the South African sample.

4.2.2 Sources of Work Stress Inventory (SWSI)

The Sources of Work Stress Inventory were used to measure the empirical research of occupational stress amongst firefighters. A brief description of the SWSI is given as well as the reliability, validity and the interpretation of the instrument.

4.2.3.1 Theoretical basis for the development of the Sources of Work Stress Inventory

According to De Bruin, & Taylor (2005) the SWSI were developed in order to provide a measure of occupational work stress that not only determines a general level of stress, but also identifies possible key sources of stress. De Bruin (2006) further mentions that at an organisational level, the SWSI can be used to assess the general level of employee stress, and pinpoint areas in the organisation that may contribute to employee stress. In this sense, the SWSI may contribute to organisational diagnosis, and be an additional evaluation in terms of organisational climate. The

SWSI can be used within the context of a comprehensive organisational evaluation, or as part of a structured employee wellness programme.

4.2.3.2 Rationale of the Sources of Work Stress Inventory

According to De Bruin (2006), the purpose of the SWSI is to provide a measure of occupational stress that not only provides an indication of general levels of stress, but also highlights possible triggers or sources of stress. These sources of stress can be identified and addressed in order to facilitate a working environment, conducive to productivity and wellness for the employees. The inventory is divided into two parts: the general work stress scale and the sources of work stress scales, which consist of statements regarding aspects of work that may cause stress (De Bruin, 2006).

The first section is the General Work Stress Scale, which contains questions about the level of stress that an individual experiences at work, in other words, the scale is used to determine to what extent the work itself is a source of stress for the individual. The second section, the Sources of Work Stress scales, consists of eight subscales.

4.2.3.3 Scales of the Sources of Work Stress Inventory

4.2.3.3.1 General Work Stress Scale

The General work Stress Scale gives an indication of the individual's overall level of work related stress. This scale consists of nine items, which ask the respondent to indicate on a five –point scale how frequently he/she experiences feelings of stress related to their work (De Bruin, 2006, p.113).

4.2.3.3.2 Sources of work stress scales

These scales measure to what extent certain areas in the workplace are stressful to the individual (De Bruin, 2006).

(a) Role ambiguity

Role ambiguity relates to the amount of stress experienced by an individual due to vague specifications or constant change regarding the expectations, duties, and constraints that define the individuals' jobs. This scale consists of seven items

regarding the specificity of the instructions given and instructions regarding the individuals' duties.

(b) Relationships

The individual experiences high levels of stress due to having poor interpersonal relations with colleagues, subordinates even with the superiors. De Bruin (2006) maintains this scale consists of eight items, which focus on the individual experience of negative relationships with other within the workplace.

(c) Tools and equipment

The employee will experience stress due to lack of relevant tools and equipment needed to perform their duties properly, or working with inappropriate complicated equipment. This scale consists of five items, which focuses on the quality and availability of equipment central to the individuals' jobs.

(d) Career advancement

De Bruin (2006) is of the opinion that career advancement refers to the stress experienced by individuals as a result of a perceived lack of opportunity to further their career prospects within the organisation for which they work. The five items in this scale involve frustrations an individual may experience in being unable to advance along the career path they have chosen.

(e) Job security

The individuals may experience stress due to the uncertainty of their future in the current workplace. There are four items in this scale regarding individuals' feelings of vulnerability to job loss or their work situation.

(f) Lack of autonomy

When employees experience stress due to lack of decision-making authority in the workplace is referred to lack of autonomy and this can be due to job or workplace constraints. This is a seven-item scale which centres on the individuals' experience of having to work in a rigid environment.

(g) Work/home interface

Work/home interface can be described as when an employee experiences stress caused by non-support from the social front such as home, friends and non-work additivity. This scale concentrates on the balance between individuals' home and work environments.

(h) Workload

Individuals experience stress if they have a perception that they will not be able to cope or unable to be productive with the amount of work allocated to them. This scale consists of six items regarding work overload and the individual's perception of being able to complete tasks in the available time allocated.

4.2.3.4 Administration of the Sources of Work Stress Inventory

The SWSI is available as both an internet-based test, and as a paper-and-pencil test. The use of paper-and pencil test was chosen, because firefighters are not office-based and not all of them have access to computers. The paper-and-pencil version of the SWSI is printed in green and blue, and has a serial number in the top right-hand corner of the question or answer sheet. Clear and easy-to-follow instructions for test takers are printed on the questionnaire, the test administrator may either read instructions aloud, or allow the test-taker to read through them thoroughly. In this study the instructions were read aloud to participants and they were allowed to ask questions if they did not understand the questionnaire.

4.2.2.1 Scoring and interpretation of the Sources of Work Stress Inventory

The SWSI scales were interpreted on both the general work scales and the sources of work stress scales.

General Work Scales

The results of this scale indicated the level of stress firefighters experienced due to work. High scores would prove that individuals spend a great deal of time worrying about their jobs. Changing jobs may be the only alternative option. Those who score low do not find their jobs to be stressful.

4.2.2.2 Justification for selection of the Sources of Work Stress Inventory

The Sources of Work Stress Inventory (SWSI) was developed in order to provide a measure of occupational work stress that not only determines a general level of stress, but also identifies key sources of stress. De Bruin (2006,) further mentions that the SWSI can be used at organisational level to assess the general level of employee stress, and pinpoint areas in the organisation that may contribute to employee stress, the latter refers directly to the problem statement that firefighters experience stress due to their day-to-day activities at work. Furthermore, the instrument was developed within the South African context, which makes it more relevant and it makes the most suitable measuring instrument for this study.

4.2.3 Limitations of the psychometric battery

Both the EQ-I 2.0 and the SWSI instruments are self-report measures. Even though it has been proven that there are many advantages of using self-report tests, there is also a number of disadvantages. Some respondents may try to manipulate the EQ-I 2.0 by responding falsely to items, but the chances were high that it would eventually be detected. MHS Inc. has put a number of safeguards into place to test if participants can sabotage the test to look more/ less genuine chances are higher that it will be detected.

Taylor and De Bruin (2006) for Sources of Work Stress Inventory had not indicated or mentioned any safeguarded measures which can be utilised to detect if the respondents had manipulated the questionnaire by responding more favourably even though these responses may not reflect the way they actually feel, behave or think.

4.2.4 Ethical issues

This research was guided by the ethical principles stipulated by the Health Profession Council of South Africa (HPCSA), and the Ethics Committee of the supervising academic institution. A consent letter was received from the Metropolitan Municipality and permission was granted to collect data. The researcher was also granted permission by the University of South Africa to conduct the study.

The participants were also informed prior to the completion of both inventories that they were not coerced to complete the inventories and could withdraw from participating at any given time. The researcher further disclosed the purpose of the

research to the participants and read through the demographic questionnaire. Participants were informed that their information will be kept confidential to safeguard their identity. The researcher informed the participants that they were allowed to ask any questions if they had.

4.3 ADMINISTRATION OF THE PSYCHOMETRIC BATTERY

The procedure was explained to the participants, they were told what the research entailed and why they were chosen for this study. The relevance of both instruments, the Bar-On Emotional Quotient Inventory and the Sources of Work Stress Inventory for this study was also clarified to make sure that a good rapport can be formed between the researcher and the participants. The participants were given the assurance again that the information provided by them will be kept confidential and that an anonymous report will be submitted to management within the municipality with recommendations. The inventories were handed to the participants and they were given an hour to complete both inventories.

4.4 STATISTICAL DATA PROCESSING

The Statistical Package for Social Sciences version 14.0, version 24 was used to analyse the data. The researcher had entered the data on an Excel spreadsheet that was imported to the SPSS software for analysis.

4.4.1 Confirmation of the reliability and validity of the EQ-I 2.0 and SWSI

4.4.1.1 Reliability of the EQ-I 2.0

Internal Consistency refers to the degree to which all the items of a particular scale measure the same construct. The average Cronbach Alpha coefficients for the EQ-I 2.0 are high for all the subscales, ranging from .77 (Assertiveness) to .91 (self-regard), with the total EQ having an internal consistency coefficient of 0,97. It was confirmed by the MHS Inc, (2011) that the values were very similar for gender and different age groups. Overall, the EO-i2.0 reliabilities are generally higher than those of the original EQ-I 2.0

Retest reliability is also important. According to MHS Inc (2011), test-retest reliability of an assessment refers to the consistency of an individual's assessment

scores over time. This type of reliability is typically calculated by examining the correlation between individuals' scores on the same assessments, taken across two different periods. This arrangement counted for a group not an individual. For this particular instrument the test-retest data was available for 204 individuals who were assessed two to four weeks apart (mean interval=18.41, days, SD=3.22 days), and for 104 individuals who were assessed approximately eight weeks apart (mean interval=56.80 day, SD=1.25 days). Test-retest correlations were high for both the 2-4 ($r=.92$) and 8 week ($r=.81$) samples.

4.4.1.2 Validity of the EQ-I 2.0

The validity of the EQ-i2.0 was ensured by MHS Inc (2011) as well; both content and factorial validity were confirmed MHS Inc (2011) who conducted several analyses to examine the validity of the EQ-I and all the relevant facets of the Bar-On conceptualisation of EI were captured by the EQ-I 2 according to the content validity analysis.

4.4.1.3 Reliability of the SWSI

De Bruin (2006, p. 113) conducted two studies where they reported the internal consistency of the SWSI. In the first version there were 311 participants while in the second there were 464 participants. These authors reported that the internal consistency reliability coefficients for the first version had values ranging between 0.86 and 0.95. For the second version the alpha values ranged between 0.86 and 0.94 for the second version (see Table 4.10).

Table 4.9 Internal consistency reliability coefficients (Cronbach α) of the Sources of Work Stress Inventory

Scale	Version 1 (N = 311)		Version 2 (N = 464)	
	N	A	N	A
General work stress	11	.92	9	.91
Role ambiguity	9	.89	7	.87
Relationships	11	.93	8	.94
Tools and equipment	8	.91	5	.90
Career advancement	5	.90	5	.89
Job security	4	.93	4	.92
Lack of autonomy	17	.95	7	.90
Work/Home interface	7	.86	8	.86
Workload	9	.93	6	.88

4.4.1.4 Validity of the SWSI

Structural Validity

According to Taylor and de Bruin (2006), A maximum-likelihood factor analysis with a Proamax rotation ($k=4$) was performed on the items, resulting in an eight-factor solution consistent with the structure of the SWSI. All items, had salient primary loadings on their posited factors , except for item 35. “Not being consulted on changes at work that affect me”, which has similar loadings on career Advancement and lack of Autonomy.

4.4.2 Descriptive statistics

Descriptive statistics are statistics for describing data for the study sample. They can be used for making comparisons for the sample; the nature of this study was bivariate as it involved two variables. The comparisons can be based on computations such as the mode, mean and the standard deviation (Babbie, 2012).

4.4.2.1 Descriptive statistics on the EQ-I 2.0 and SWSI

The descriptive statistics of the Bar-On Emotional Quotient Inventory (EQ-I 2.0) and Sources of Work Stress Inventory (SWSI) was calculated using the median, mean and the standard deviation. The mode represents the most occurring number, the average scores of the sample is the mean and the standard deviation indicates as to how much the scores vary from the mean scores.

4.4.2.2 Inter-correlation analysis

According to Babbie (2012, p.114) inter-correlation analysis is used to assess the existence of a mutual relationship or connection between two or more variables. There are two types or directions, the positive correlation and negative correlation. A positive correlation implies that as the values of one of the variables increase, the values of the second variable also increase or vice versa. A negative correlation implies that as the values of one of the variables increase, the values of the second variable decrease or vice versa. The inter-correlations between EI and occupational stressors were calculated.

4.5 FORMULATION OF RESEARCH HYPOTHESES

In this section the research hypotheses are shared. The researcher was of the view that it is important to formulate research hypotheses in order to answer the questions of this study. Firstly, the hypotheses referred to the reliability and validity. Secondly, the hypotheses were in terms of the aims of the study:

H1: The scores obtained from the EQ-I 2.0 are reliable and valid;

H2: The scores obtained from the SWSI are reliable and valid;

H3: There is a significant relationship between the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title), and the composite scales of the EQ-I 2.0;

H4: There is a significant relationship between the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title), and the composite scales of the SWSI;

H5: There is a significant and negative correlation between EI (independent variable) and occupational stress (dependent variable) amongst firefighters.

H4: Firefighters from various demographic groups differ significantly in their occupational stress and EI level.

4.6 CHAPTER SUMMARY

The chapter discussed the population, sample, choice and justification of the psychometric battery, the statistical data processing, and the formulation of the research hypothesis. The results are presented in Chapter 5.

CHAPTER 5

REPORTING AND INTERPRETING THE RESULTS

5.1 INTRODUCTION

The chapter presents the quantitative results in terms of the empirical aims and hypotheses of the research. The results of the research are discussed and integrated. The chapter presents the empirical findings, which address the specific empirical aims of the research. They were to:

- determine the relationship between EI and occupational stress amongst firefighters in a metropolitan municipality;
- determine whether firefighters from the various demographic groups differ significantly relating to EI and their perception of occupational stress as manifested within a sample of firefighters in a metropolitan municipality;
- determine the relationship between the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title), EI and occupational stress amongst firefighters in a metropolitan municipality; and
- determine whether the demographic variables (age, gender, ethnicity, marital status qualifications, job experience and job title) and EI significantly predict occupational stress amongst firefighters in a metropolitan municipality.

The presentation of the quantitative results involve the earlier mentioned descriptive and inferential statistics.

5.2 CONFIRMATION OF THE RELIABILITY AND VALIDITY

This section reports the Cronbach alpha coefficients of the Bar-On Emotional Quotient Questionnaire and the Work Stress Inventory.

5.2.1 Internal consistency reliability analysis of the Bar-On Emotional Quotient Inventory (EQ-i 2.0)

Table 5.1: Cronbach alpha value for the EQ-i 2.0

	Number. of Items	SA Study by JVR <i>α</i>	Current study A
Self-perception	24	.88	.88
Self-expression	23	.84	.88
Interpersonal	23	.88	.89
Decision making	24	.86	.88
Stress management	24	.88	.87
Happiness	8	.83	.67
eq-i 2.0	133	.96	.97

South African normative values for the reliability of this instrument (MHS Inc, 2011) was computed by determining its internal consistency. Internal consistency is a measure of reliability that conveys the degree to which a set of items are associated with one another. The Cronbach alpha coefficients are reported by MHS Staff (2011) for the South African Bar-On Emotional Quotient Inventory (EQ-i 2.0) as portrayed in Table 5.1. The Cronbach alpha value for the entire EQ-i 2.0 of this study was found to be excellent at .97. A high level of internal consistency suggests that the set of items are measuring a single cohesive construct. This form of reliability (internal consistency) is typically measured using Cronbach alpha (Cronbach, 1951). However Happiness had a low Cronbach Alpha coefficient of 0.67 which is just a well-being indicator and does not affect any decision-making (MHS Inc, 2011).

5.2.2 Validity of the Bar-On Emotional Quotient Inventory (EQ-I 2.0)

The Bar-On Emotional Quotient Inventory (EQ-I 2.0) (MHS Inc, 2011) comprehensively explains how the validity of the questionnaire was ensured; see section 2.5.2 referring to the basis the validity of this particular questionnaire was accepted *a priori*.

5.2.3 Internal consistency reliability analysis of the Sources of Work Stress Inventory (SWSI)

Table 5.2: Cronbach alpha value for the Sources of Work Stress Inventory

	Version 1		Version 2		CURRENT Study	
	(Number = 311)	α	(Number = 464)	α	(Number = 150)	α
Scale	No. of Items		No. of Items		No. of Items	
General Work Stress	11	.92	9	.91	9	.93
Role Ambiguity	9	.89	7	.87	7	.85
Relationships	11	.93	8	.94	8	.90
Tools & Equipment	8	.91	5	.90	5	.86
Career Advancement	5	.90	5	.89	5	.80
Job Security	4	.93	4	.92	4	.82
Lack of Autonomy	17	.95	7	.90	7	.81
Work/Home Interface	7	.86	8	.86	7	.80
Workload	9	.93	6	.88	7	.83

The test developers Taylor and De Bruin (2006) developed the SWSI as the two-way step phase, where data obtained for the initial version of the test provided the basis for the refinement of the SWSI. The first version of the SWSI consisted of a 15-item General Work Stress scale, and nine sources of Work stress scales that constituted the longer 79-item section of the inventory. The SWSI was administered to 311 employees at the South African university, and later to 153 employees at a different academic institution (de Bruin & Taylor, 2003a, 2003b, 2005). These two groups were combined to provide a total sample of 464 employees (189 men, 245 women, and 30 did not specify). In this study the reliability was computed by means of Cronbach's alpha,

using Gliem and Gliem’s (2003) rule of thumb; the reliability of the SWSI scale was found to be excellent at .96. Similarly, the reliabilities of the subscales were either good or excellent (Refer to Table 5.2). The reliabilities of the subscale ranges were consistent with those reported by Taylor and de Bruin (2006), and the authors indicated “...alpha coefficients can be described as acceptable.” This assures that the reliability of this study’s alpha values were also acceptable.

5.2.4 Validity of the Sources of Work Stress Inventory (SWSI)

In developing the SWSI Taylor and de Bruin (2006) explained that they conducted a maximum-likelihood factor analysis with Promax rotation to establish its validity for the purposes of this study. It was on the basis of these authors’ explanations that the validity was accepted *a priori* here.

5.3 DESCRIPTIVE STATISTICS

5.3.1 Descriptive statistics of the Bar-On Emotional Quotient Inventory (EQ-I 2.0)

The descriptive statistics of the EQ-I 2.0 are provided in Table 5.3 with regard to minimum, maximum, mean and standard deviation.

Table 5.3: Descriptive statistics of the Bar-On Emotional Quotient Inventory (EQ-I 2.0)

	No. of Participant s	Minimum	Maximum	Mean	Standard Deviation
Self-perception	150	64	116	86.44	11.733
Self-expression	150	51	107	72.23	9.711
Interpersonal	150	60	115	83.99	12.854
Decision making	150	57	104	73.87	9.631
Stress management	150	58	108	81.63	8.496

5.3.1.1 Descriptive statistics on Emotional Intelligence using T-scores

The level of emotional intelligence using the composite scales of the Emotional Quotient Questionnaire (EQ-I 2.0) were based on the T-scores provided by MHS Inc (2011).

5.3.1.1.1 Self-Perception Composite scale

MHS Inc (2011) interprets the Self-Perception Composite scale as having a solid understanding of oneself; one's inner life means so one can better express thoughts and feelings.

Table 5.4: Self-Perception

		Frequency	Percent
Valid	< 90	75	50.0
	Other	68	45.3
	> 110	7	4.7
	Total	150	100.0

According to MHS Inc (2011) the EQ-I 2.0 reports use the following categories to describe individual functioning:

Low Range: Scores below 90

Mid-Range: Scores between 90-110

High Range: Scores above 110

One basis for the EQ-i 2.0 score ranges is statistical:

About 25% of the population scores below 90

About 50% of the population scores between 90-110

About 25% of the population scores above 110

As far as self-perception is concerned, the interpretations are based on the T-score guidelines. Table 5.4 reveals that 50% of firefighters may not be in touch with feelings, may lack inner strength, confidence and emotions. Moreover, emotions may elude or confuse them, so that they do not understand their emotional landscape or make good use of their abilities. Whereas 5% of firefighters (>110) feel good about themselves,

feel positive about life, are in touch with their emotions, recognise and predict emotions and detect nuances between different emotions (MHS Staff. (2011). Table 5.4 further indicates that 45.3% of the participants scored between low (identify skills that need to be increased to improve overall functioning) and high (enhanced skills, which must be carefully interpreted).

5.3.1.1.2 Self-Expression Composite scale

Table 5.5 reveals that 95% of firefighters struggle to express their own thoughts and feelings, may be emotionally dependant, and may find it difficult to describe how they feel. Expressing emotions may not be constructive and firefighters may refrain from sharing thoughts and beliefs. Four point seven percent (4.7%) of the firefighters scored between low (they identified skills that need to be increased to improve overall functioning) and high range (enhanced skills, which must be carefully interpreted).

Table 5.5: Self-expression

		Frequency	Percent
Valid	< 90	143	95.3
	Other	7	4.7
	Total	150	100.0

5.3.1.1.3 Interpersonal Composite scale

Table 5.6 indicates that 67% of firefighters lack appropriate social skills and are withdrawn. They struggle to understand and relate to others and do not see how their own emotions affect others. Their relationships may be of a lower quality or depth and may not be sensitive to the feelings of others. One point three percent (1.3%) of the firefighters revealed that they seek and maintain high calibre relationships, are sensitive and care for the needs of others. They might predict how their own emotions affect others, are sociable, easy to approach and feel the responsibility to contribute to society, social group or a team. Thirty two percent (32%) of the firefighters scored between low (identify skills that need to be increased to improve overall functioning) and high range (enhanced skills, which must be carefully interpreted).

Table 5.6: Interpersonal

		Frequency	Percent
Valid	< 90	100	66.7
	Other	48	32.0
	> 110	2	1.3
Total		150	100.0

5.3.1.1.4 Decision-making composite scale

Table 5.7 reveals that 94% of firefighters may not use emotional information effectively, since emotions may hinder decision-making, as they may fall victim to rash behaviours/decisions, could struggle to remain objective and may be derailed or biased by emotions. Six percent (6%) of the firefighters scored between low (identify skills that need to be increased to improve overall functioning) and high range (enhanced skills, which must be carefully interpreted).

Table 5.7: Decision-making

		Frequency	Percent
Valid	< 90	141	94.0
	Other	9	6.0
	Total	150	100.0

5.3.1.1.5 Stress management composite scale

As far as stress management is concerned 88% of firefighters struggle when faced with stress or change, may often feel anxious or stressed and may be rooted in tradition; they are resistant to change, pessimistic about the future and less hopeful and resilient. Twelve percent (12%) of the firefighters scored between low (identify skills that need to be increased to improve overall functioning) and high (enhanced skills, must be carefully interpreted).

Table 5.8: Stress management

		Frequency	Percent
Valid	< 90	132	88.0
	Other	18	12.0
	Total	150	100.0

5.3.1 Descriptive statistics of the Sources of Work Stress Inventory (SWSI)

Table 5.9 indicates the descriptive statistics for the raw scores of the SWSI subscales, in terms of the means, standard deviations and standard errors include the minimum and maximum as well as the standard deviation.

Table: 5.9: Descriptive statistics of the Sources of Work Stress Inventory (SWSI)

Scale	Mean	SD	SE
General Work Stress	21.42	8.849	.722
Role ambiguity	17.59	6.306	.515
Relationships	20.22	8.231	.672
Tools and equipment	14.03	5.102	.417
Career advancement	14.94	5.016	.410
Job security	11.49	3.882	.317
Lack of autonomy	20.41	5.986	.489
Work/Home interface	18.82	6.136	.501
Workload	19.06	6.367	.520

Table 5.9 shows the descriptive statistics for the raw scores of the SWSI subscales. The General Work Stress subscale (9 items) shows that firefighters had a mean of $M = 21.4$, $SD = 8.85$. The results indicate that 74 (49.3%) firefighters were below average which seems that they had low levels of stress. This corresponds with Taylor and de Bruin (2006,p.7) who indicate that “[L]ow scorers do not find their jobs to be stressful”. The findings thus correspond with the literature review.

The responses to role ambiguity (7 items) show that firefighters had a mean of $M = 18$, $SD = 6.31$. The results indicate that 86 (57.3%) firefighters were below average and this was interpreted as possessing low levels of stress. Taylor and de Bruin (2006, p.7) maintain that: “[L]ow scorers either do not mind having vague assignments, or know

exactly what is expected of them in their jobs.” This can therefore, be the case in this instance as well, since the respondents were sure of what was expected of them.

Results on relationships (8 items) show that firefighters had a mean of $M = 20$, $SD = 8.23$. Here there were 71(%) firefighters who were below average and 71(%) firefighters who were above average. In terms of the former, they had very little contact with people at work (Taylor & de Bruin, 2006), while the latter experienced the opposite. Those who communicated well with others at work had an advantage.

Concerning tools and equipment (5 items) results reveal that participants had a mean of $M = 14$, $SD = 5$. Here there were 70 (46.7%) firefighters who were below average and this was interpreted to mean that they had low levels of stress. The results correspond with what was found by Taylor and de Bruin (2006,p.8) who indicate that “[L]ow scorers deal well with the technical problems that may arise from working with high-tech equipment ...”

The Career Advancement subscale (5 items) shows that firefighters had a mean of $M = 14.9$, $SD = 5.02$. Here there were 62 (41.3%) firefighters above average which indicates that they had high levels of stress. This can be elucidated by referring to Taylor and de Bruin (2006, p.8) who maintain that “[H]igh scorers feel discouraged and frustrated by not advancing in their careers, and are concerned about how to further their job prospects.” The fear of a lack of promotion can be seen as a stressor.

The job security subscale (4 items) shows that firefighters had a mean of $M = 11.5$, $SD = 3.9$. Here there were 64 (42.7 %) participants who were above average and this point to the high levels of stress. This corresponds with Taylor and de Bruin (2006) who indicate that “[H]igh scorers tend to worry about the stability of their positions in the workplace, especially when there are changes in the workplace foreseen in the organization.”

The lack of an autonomy subscale (7 items) shows that firefighters had a mean of $M = 20$, $SD = 5.9$. Here there were 66 (44 %) firefighters who were below average and this implies that they had low levels of stress. It can be deduced from the results that they were fine with their circumstances. Taylor and de Bruin (2006) indicate that low scorers are not aggravated by an inability to make or implement their own decisions.

The results of the aspect of Work/Home Interface (7 items) reveal that firefighters had a mean of $M = 19$, $SD = 6$. Here there were 74 (49.3 %) firefighters who were below average and this indicates that they had low levels of stress. Taylor and de Bruin (2006) assert that: “[L]ow scorers have a good balance between their work and home life, and the one does not interfere with the success of the other”. It can be gathered that the participants in this study balanced their personal lives with their demands at work.

The results on Workload (6 items) indicate that firefighters had a mean of $M = 19$, $SD = 6$. Here there were 70 (46.7 %) firefighters who were below average and this points to the fact that that they had low levels of stress. Taylor and de Bruin (2006) indicate that “[L]ow scorers are able to handle the amount of work allocated to them efficiently, without allowing it to encroach on their personal time”.

5.4 CORRELATION ANALYSIS

5.4.1 Bar-On Emotional Quotient Inventory (EQ-I 2.0) Composite scales

Table 5.10 illustrates the correlations amongst the EQ-I 2.0 composite scales of the firefighters. The composite scales of the EQ-I 2.0 were used. The values which are marked with an asterisk (*) shows that those correlation coefficients are statistically significant, and those which are not marked by an asterisk are not statistically different from 0. There is evidence of a statistically significant relationship between the variables analysed.

Most of the composite scales yielded statistically significant positive relationships with each other for example: Self-Expression (S-E), Interpersonal composite, Decision-making (DM), stress management (SM) and Self Perception (.303*, .847*, .314* and .578*). A positive correlation means that an increase in the score of the composite scale is accompanied by an increase in the score of another composite scale.

Table 5.10: Correlations amongst the EQ-I 2.0 Composite scales

	SP	SE	IR	DM	SM
1. Self-perception					
2. Self-expression	.303*				
3. Interpersonal	.847*	.265*			
4. Decision-making	.314*	.709*	.241*		
5. Stress management	.578*	.532*	.516*	.537*	

* $p < 0,05$, ** $p < 0,01$

** . Correlation is significant at the 0.01 level (2-tailed)

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

$0.10 \leq r < 0.30$ (small effect)

$0.30 \leq r < 0.5$ (Medium effect)

$r \geq 0.5$ (Large effect)

5.4.2 Sources of Work Stress Inventory (SWSI) subscales

According to Hauke & Kossowski (2011), Spearman's rank correlation coefficient is described as a nonparametric (distribution-free) rank statistic proposed by Charles Spearman as a measure of the strength of an association between two variables. It is a measure of a monotone association that is used when the distribution of data makes Pearson's correlation coefficient undesirable or misleading. Pearson correlation was used to measure the relationship or the strength of association between the SWSI subscales. Table 5.11 indicates that statistically significant correlations at the 0.01 level were obtained between all of the SWSi subscales. Total general work stress yielded statistically positive correlations with role ambiguity, relationships, tools and equipment, career advancement, job security, lack of autonomy, workload and work interface (.567**, .521**, .398**, .360**, .367**, .313**, .388 and .365** respectively). It shows that general work stress has a significant positive relationship with all the SWSI subscales.

Table 5.11: Correlations between the Sources of Work Stress Inventory (SWSI) subscales

	General Work Stress	Role Ambiguity	Relationships	Tools and Equipment	Career Advancement	Job Security	Lack of Autonomy	Work/Home Interface	Workload
General Work Stress	1								
Role Ambiguity	.567**	1							
Relationships	.521**	.728**	1						
Tools and equipment	.398**	.608**	.658**	1					
Career advancement	.360**	.494**	.585**	.634**	1				
Job security	.367**	.568**	.589**	.614**	.701**	1			
Lack of autonomy	.313**	.553**	.601**	.639**	.678**	.650**	1		
Work/Home interface	.388**	.664**	.607**	.397**	.456**	.596**	.533**	1	
Workload	.365**	.601**	.541**	.401**	.352**	.612**	.487**	.747**	1

** . Correlation is significant at the 0.01 level (2-tailed).

5.4.3 Biographical data and the Bar-On Emotional Quotient Inventory (EQ-I 2.0) Composite scales

The Spearman's correlation was used to determine the relationship or strength of association between biographical data and the composite scales of the EQ-I 2.0. The firefighters did not provide their actual age in the biographical questionnaire, but it was provided in age categories. Thus, age is a nominal/categorical variable and the statistics were computed accordingly. Table 5.12 indicates that age has yielded statistically significant positive correlations between job title and work experience (.380* and .520* respectively). A statistically significant positive correlation was found between qualifications and job title at (.244*). Work experience has a

statistically significant positive correlation with Interpersonal Composite Scale (.187*).

Table 5.12: Correlations between biographical data and EQ-I 2.0 Composite Scales (N-150)

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Age									
2. Qualification	.084								
3. Job title	.380*	.244*							
4. Work experience	.520*	-.032	.136						
5. Self-perception	.121	-.115	.087	„					
6. Self-expression	-.102	-.029	.043	-.126	.303*				
7. Interpersonal	.159	-.122	.114	.187*	.847*	.265*			
8. Decision making	-.010	-.034	.031	-.034	.314*	.709*	.241*		
9. Stress management	.133	-.035	.013	.158	.578*	.532*	.516*	.537*	

* P < 0.01

5.4.4 Biographical data and the Sources of Work Stress Inventory (SWSI) subscales

The Spearman's correlation was used to determine the relationship or strength of association between biographical data and the sub-scales of the SWSI. Table 5.13 indicates that the SWSI subscales and the biographical variables are not statistically different from 0, except for career advancement which yielded a statistically significant positive relationship with job experience (.165*).

Table 5.13: Correlations between biographical data and the Sources of Work Stress Inventory (SWSI) subscales (N-150)

				Age	Qualification	Job Title	Job Experience	
Spearman's rho	General Work Stress (TOTAL)	Correlation		-0.002	0.040	-0.026	0.021	
		Coefficient						
		Sig. (2-tailed)		0.984	0.628	0.754	0.802	
			N		150	150	150	150
	Role Ambiguity (TOTAL)	Correlation		-0.097	0.076	-0.103	0.095	
		Coefficient						
		Sig. (2-tailed)		0.238	0.357	0.208	0.249	
			N		150	150	150	150
	Relationships (TOTAL)	Correlation		-0.075	-0.011	-0.093	0.065	
		Coefficient						
		Sig. (2-tailed)		0.360	0.894	0.256	0.427	
			N		150	150	150	150
	Tools and Equipment (TOTAL)	Correlation		-0.101	0.097	-0.023	-0.113	
		Coefficient						
		Sig. (2-tailed)		0.220	0.239	0.782	0.169	
			N		150	150	150	150
	Career Advancement (TOTAL)	Correlation		0.096	0.109	0.065	.165*	
		Coefficient						
		Sig. (2-tailed)		0.244	0.183	0.431	0.043	
			N		150	150	150	150
	Job Security (TOTAL)	Correlation		-0.102	-0.007	0.088	0.039	
		Coefficient						
		Sig. (2-tailed)		0.214	0.936	0.284	0.640	
			N		150	150	150	150
Lack of Autonomy (TOTAL)	Correlation		-0.075	0.024	0.035	0.029		
	Coefficient							
	Sig. (2-tailed)		0.361	0.769	0.671	0.728		
		N		150	150	150	150	
Work/Home Interface (TOTAL)	Correlation		-0.099	-0.142	0.040	0.000		
	Coefficient							
	Sig. (2-tailed)		0.229	0.084	0.626	0.995		
		N		150	150	150	150	
Workload (TOTAL)	Correlation		-0.117	-0.089	-0.030	0.026		
	Coefficient							
	Sig. (2-tailed)		0.154	0.277	0.720	0.753		

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

5.4.5 EQ-I 2.0 Composite scales and the SWSI subscales

The Pearson correlation was used to evaluate the linear relationship between EI and occupational stress. The SWSI subscales and the EQ-I 2.0 Composite Scales yielded statistically significant negative correlations. General Work Stress yielded statistically significant negative correlations with self-perception, interpersonal relationships and the Total Emotional Intelligence Quotient (EQ-i 2.0) (-.437*, -.418* and -.238* respectively). Role ambiguity yielded a statistically significant negative correlation with self-perception and interpersonal relationships (-.225* and -.202* respectively). There are statistically significant negative correlations with self-perception and interpersonal relationships (-.162* and -.167* respectively), however relationships have on the other hand yielded a statistically significant positive relationship with decision-making at (.240*).

The findings of the research particularly the statistically significant correlations of the SWSI and the Composite scales of the EQ-I 2.0 were consistent with the hypothesis. The hypothesis specified that the interaction effect between EI (independent variable) and occupational stress (dependent variable) predict a significantly negative relationship between the two variables amongst firefighters, which means that if the score of EI increases occupational stress decreases. It depends on how the various scales were coded – whether EQ-I positive properties (i.e. high scores) were pitted against SWSI negative properties. (For instance Job Security correlated positively with all EQ constructs as expected).

Table 5.14: Pearson inter correlations between EQ-I 2.0 and SWSI scales (N=150)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
EQi-20														
1. Self-perception														
2. Self-expression	.303*													
3. Interpersonal	.847*	.265*												
4. Decision-making	.314*	.709*	.241*											
5. Stress Management	.578*	.532*	.516*	.537*										
6. EQI (TOTAL)	.833*	.696*	.797*	.690*	.801*									
SWSI														
7. General Work Stress	-	.023	-	.134	-.058	-								
8. Role Ambiguity	.437*		.418*			.238*								
9. Relationships	-	.148	-	.216*	.054	-.033	.567*							
10. Tools and Equipment	.225*		.202*											
11. Career Advancement	-	.043	-	.240*	.072	-.019	.521*	.728*						
12. Job Security	.162*		.167*											
13. Lack of Autonomy	-.155	.126	-	.072	.030	-.053	.398*	.608*	.658*					
14. Work/Home Interface	.193*													
15. Workload	.077	.138	.051	.164*	.165*	.145	.360*	.494*	.585*	.634*				
	.031	.164*	.088	.164*	.115	.140	.367*	.568*	.589*	.614*	.701*			
	.037	.082	-.009	.182*	.127	.096	.313*	.553*	.601*	.639*	.678*	.650*		
	-.088	.117	-.050	.196*	.030	.041	.388*	.664*	.607*	.397*	.456*	.596*	.533*	
	-.046	.110	-.006	.151	.082	.067	.365*	.601*	.541*	.401*	.352*	.612*	.487*	.747*

* p < 0.05 and p < 0.01

5.5 INFERENTIAL STATISTICS

5.5.1 Multiple regression analysis

A multiple linear regression analysis was conducted to determine the relationship between EI and Occupational stressors. A multiple linear regression is used to model the linear regression between independent variables and dependent variables. The proportion variance in the dependent variable (general work stress) is explained by the

independent variables (self-perception, self-expression, interpersonal, decision-making and stress management) – Refer to Table 5.15. Table 5.15 indicates that only 27% (Adjusted R² =0.268) of variance in general work stress can be explained by self-perception, self-expression, interpersonal, decision-making and stress management. The remaining 73% of the variance is explained by other factors not considered in this study.

Table 5.15: Multiple regression analysis

	Adjusted R ²	DF	F	Significance
General work stress	.268	9	7.053	.000
Role ambiguity	.134	9	3.571	.001
Relationships	.130	9	3.464	.001
tools and equipment	.043	9	1.745	.084
Career advancement	.020	9	1.335	.224
Job security	-.001	9	.983	.457
Lack of autonomy	.005	9	1.087	.376
Work/Home interface	.051	9	1.890	.058
Workload	.025	9	1.431	.180

Table 5.16 indicates a statistically negative and significant relationship between self-perception and general work stress, role ambiguity and relationships ($\beta = -.443$, $p < 0.05$), ($\beta = -.282$, $p < 0.05$); ($\beta = -.190$, $p < 0.05$). There is a statistically negative and insignificant relationship concerning self-perception, tools, equipment, job security, work/home interface and workload ($\beta = -.084$, $p < 0.05$), ($\beta = -.227$, $p < 0.05$), ($\beta = -.232$, $p < 0.05$), and ($\beta = -.207$, $p < 0.05$). Moreover, career advancement and lack of autonomy has shown to have a positive and insignificant relationship with self-perception at (079 and 078).

Table 5.16: Multiple Regression Analysis of the predictors of general work stress

	Self-perception		Self-expression		Interpersonal		Decision making		Stress management	
	Beta	T	Beta	T	Beta	T	Beta	T	Beta	T
General work Stress	-.443	-3.078	-.080	-.767	-.195	-1.436	.274	2.614	.188	1.799
Role ambiguity	-.282	-1.805	.007	.061	-.021	-.141	.246	2.160	.102	.897
Relationships	-.190	-1.212	-.258	-2.262	-.061	-.412	.425	3.722	.132	1.153
Tools and equipment	-.084	-.512	.146	1.226	-.202	-1.305	-.026	-.216	.128	1.071
Career advancement	.079	.477	.054	.443	-.061	-.392	.091	.751	.050	.414
Job security	-.227	-1.350	.069	.564	.215	1.359	.096	.787	.059	.484
Lack of autonomy	.078	.467	-.123	-1.010	-.130	-.825	.208	1.706	.115	.945
Work/Home interface	-.232	-1.414	-.036	-.306	.075	.487	.242	2.029	.041	.340
Workload	-.207	-1.246	-.026	-.214	.112	.716	.135	1.121	.112	.928

***p<0.05**

Self-expression has shown to have a statistically significant and negative relationship with general work stress and relationships at ($\beta=-.080$, $p<0.05$) and ($\beta=-.258$, $p<0.05$) respectively, however self-expression has also shown to have a statistically positive and significant relationship with role ambiguity ($\beta=.007$, $p<0.05$). Self-expression has shown to yield a statistically negative and insignificant relationship with lack of autonomy, work/home interface and workload at ($\beta=-.123$, $p<0.05$), ($\beta=-.036$, $p<0.05$) and ($\beta=-.026$, $p<0.05$).

Interpersonal relationships have shown to have a statistically negative and significant relationship with general work stress, role ambiguity and relationships at ($\beta = -.195$, $p < 0.05$); ($\beta = -.021$, $p < 0.05$) and ($\beta = -.061$, $p < 0.05$). However, job security, work/home interface and workload yielded a statistically positive and insignificant relationship with interpersonal relationships at ($\beta = .215$, $p < 0.05$). ($\beta = .021$, $p < 0.05$). Tools and equipment, career advancement and lack autonomy yielded a statistically negative insignificant relationship with interpersonal relationships at ($\beta = -.202$, $p < 0.05$); ($\beta = -.061$, $p < 0.05$). ($\beta = -.130$, $p < 0.05$). Decision-making has shown to have a positive significant relationship with general work stress, role ambiguity and relationships at ($\beta = .274$, $p < 0.05$), ($\beta = .246$, $p < 0.05$) and ($\beta = .425$, $p < 0.05$). However tools and equipment yielded a statistically negative and insignificant relationship with decision-making at ($\beta = -.202$, $p < 0.05$). Career advancement, job security, lack of autonomy, work/home interface and workload yielded a positive and insignificant relationship with decision-making at ($\beta = .091$, $p < 0.05$), ($\beta = .096$, $p < 0.05$), ($\beta = .208$, $p < 0.05$), ($\beta = .242$, $p < 0.05$) and ($\beta = .135$, $p < 0.05$).

Stress management has shown to have a statistically positive significant relationship with general work stress, role ambiguity and relationships at ($\beta = .188$, $p < 0.05$), ($\beta = .102$, $p < 0.05$) and ($\beta = .132$, $p < 0.05$). However, all the other subscales yielded a statistically positive and insignificant relationship with stress management at ($\beta = .128$, $p < 0.05$), ($\beta = .050$, $p < 0.05$), ($\beta = .059$, $p < 0.05$) and ($\beta = .115$, $p < 0.05$) and ($\beta = .112$, $p < 0.05$).

The five composite scales for EQ-I 2.0 (self-perception, self-expression, interpersonal relationships, decision-making and stress management) reveal an insignificant relationship with SWSI subscales (tools and equipment, career advancement, job security, lack of autonomy, work/home interface and workload). The findings imply that there is no relationship among these variables. The results indicate that there is no relationship among the five composite scales of the EQ-I 2.0 and the six SWSI subscales. This finding can be justified by the nature of their daily work.

5.6 INTEGRATION OF RESEARCH RESULTS

5.6.1 Biographical profile of the sample

Different biographical data (age, gender, ethnicity, marital status, qualifications, job experience and job title) have been analysed with the subscales of the SWSI and the composite scales of the EQ-I 2.0. The majority of the SWSI subscales are not statistically different from 0, which means that there is no evidence of a statistically significant relationship amongst the variables. However, career advancement and work experience have shown to have a statistically significant positive relationship with job experience, which corresponds with the study conducted by Nabriye et al. (2011). It was indicated that employees who worked for more than ten years often seek promotion or advanced opportunities, interested in becoming involved in decision and policymaking at their workplace or receiving recognition for good work. If they do not, they tend to be less satisfied with their jobs and experience more strain at work. The employees who had worked for more than twenty years reported to have the highest levels of occupational stress.

Age has shown to have a statistically significant positive correlation with job title. In addition, work experience which can be aligned to a study conducted by (Chung, Park, Cho, & Yang, 2015) who found that there was a strong correlation between workers' age and the number of years of service in the workplace.

5.6.2 Descriptive statistics: Interpretation of results

5.6.2.1 Emotional intelligence profile

The EQ-i 2.0 Cronbach Alpha internal consistency coefficient for the entire study is 0.97, which is in line with the Cronbach Alpha internal consistency coefficient for the South African study conducted by Jopie Van Rooyen, which was established at 0.96. This suggests that the sub-scales reliably measured what they were supposed to measure for the research participants.

5.6.2.2 Occupational stressors profile

The SWSI Cronbach Alpha internal consistency for the entire questionnaire is 0.96 is in line with the Cronbach Alpha internal consistency coefficient by Taylor and de

Bruin (2006) at 0.95 version 1 and 0.94 version 2, and this suggests that that the subscales reliably measured what they were supposed to measure for the research participants.

5.6.3 Empirical research aim 1

The aim was to empirically determine the relationship between EI and occupational stressors amongst firefighters in a metropolitan municipality. The findings of the research particularly the statistically significant correlations of the Sources of Work Stress Inventory and the Composite scales of the Bar-On Emotional Quotient Inventory (EQ-I 2.0) were consistent with the hypothesis. The hypothesis specified that the interaction effect between EI (independent variable) and occupational stress (dependent variable) predict a significantly negative relationship between the two variables amongst firefighters. However, some of the Sources of Work Stress Inventory scales have shown to have an insignificant relationship (regression) with the Bar-On Emotional Intelligence Quotient Inventory (EQ-I 2.0) Composite Scales, which could be attributed to the nature of work that firefighters find themselves doing on a daily basis.

5.6.4 Empirical research aim 2

The aim was to empirically determine whether firefighters from the various demographic groups differ significantly relating to EI and their perception of occupational stress as manifested within a sample of firefighters in a metropolitan municipality. Work experience has shown to have a statistically significant positive correlation with Interpersonal Composite Scale. Career advancement and job experience have shown to have a positive correlation whereas all the other subscales yielded an insignificant relationship with the biographical data.

5.6.5 Empirical research aim 3

The aim was to empirically determine the relationship between the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title), EI and occupational stress amongst firefighters in a metropolitan municipality. Work experience has proven to have a statistically significant positive correlation with Interpersonal Composite Scale, which indicates that firefighters whose been employed

for longer tend to have good interpersonal relations with their colleagues, as well as career advancement yielded a statistically significant positive relationship with job experience.

5.6.6 Empirical research aim 4

The aim was to empirically determine whether the demographic variables (age, gender, ethnicity, marital status qualifications, job experience and job title) and EI significantly predict occupational stress amongst firefighters in a metropolitan municipality. It has been proven that firefighters who scored high in emotional intelligence experience less stress and those scored low on emotional intelligence experienced more stress.

5.7 CHAPTER SUMMARY

In summary, this chapter presented the results of the research concerning the reliability and validity of the measuring instruments, the descriptive statistics of the Bar-On Emotional Quotient Inventory EQ-I 2.0 and the Sources of Work Stress Inventory (SWSI). The correlation analysis of the Bar-On Emotional Quotient Inventory EQ-I 2.0 and the Sources of Work Stress Inventory (SWSI) including multiple regression analysis were also discussed. The integration of the results were finally discussed. The conclusions, recommendations and limitations of the research are outlined in Chapter 6.

CHAPTER 6

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The previous chapter reported the results of the quantitative data and interpretation thereof were provided. The statistics was calculated in detail and the main results were provided. This chapter focuses on the conclusions related to defined aims, discussing the limitations of the study, providing recommendations and finally the integration of the study.

6.2 CONCLUSION RELATING TO DEFINED AIMS

6.2.1 Conclusion regarding the literature review

The general aim of this study was to investigate the relationship between EI and occupational stress amongst firefighters in a metropolitan municipality.

The general aim was achieved by addressing the specific aims of the research, which were conceptualised in the literature review as follows. This information is summarised next. The aims were to:

- (1) conceptualise the construct of emotional intelligence amongst firefighters in a metropolitan municipality from a theoretical perspective;
- (2) conceptualise the construct of occupational stress amongst firefighters in a metropolitan municipality from a theoretical perspective;
- (3) conceptualise the implications of the relationship between EI and occupational stress amongst firefighters in a metropolitan municipality from a theoretical perspective;
- (4) determine theoretically the role of the biographical variables (age, gender, ethnicity, marital status, qualifications, job experience and job title) in respect of emotional intelligence and occupational stress amongst firefighters in a metropolitan municipality; and

- (5) determine the implications for industrial psychology practices and future research.

6.2.1.1. Specific aim 1

Conceptualise the construct of emotional intelligence amongst firefighters in a metropolitan municipality from a theoretical perspective.

The first aim was to conceptualise the construct of EI amongst firefighters in a metropolitan municipality from a theoretical perspective which was achieved in Chapter 2 by providing a comprehensive literature review that was discussed. EI was first described by (Salovey & Mayer, 1990), as a form of social intelligence that involves the ability to monitor one's own feelings and emotions, to discriminate among them, and to use this information to guide one's own thinking and action.

According to Goleman (1998), EI incorporates the quality of emotional resilience, or flexible optimism which gives the individual the ability to cope with interpersonal conflict. Instead of engaging in the disruptive activity of fault-finding, emotionally intelligent employees are flexibly optimistic enough to put difficulties behind them and redirect their attention to conflict resolution, which can be used as the solution to have new strategies that promote wellness, awareness, and effective personal reactions to incident-related stress. For the purpose of this study, emotional intelligence may be viewed from the perspective of Wagner and Martin (2012) who proposes that strong EI may be a protective factor for firefighters who are regularly exposed to traumatic stimuli; this finding suggests that perhaps firefighters employ their most effective coping method for their most troubling emotional turmoil. Guidotti (1992) further indicates that although firefighters are carefully trained in standard operating procedures, they are often not prepared emotionally to deal with all the aspects of unknown situations, or the lingering after-effects of stress.

6.2.1.2 Specific Aim 2

Conceptualise the construct of occupational stress amongst firefighters in a metropolitan municipality from a theoretical perspective.

The second aim was to conceptualise the construct of occupational stress amongst firefighters in a metropolitan municipality from a theoretical perspective, which was achieved in Chapter 3. Pološki Vokić and Bogdanić (2007) define occupational stress as an inability to cope with the pressures encountered in a job, because of poor fit between workers' abilities and their job requirements and conditions. Loo, (2015) defines occupational stress as a mental and physical condition, which affects an individual's productivity, effectiveness, personal health and quality of work. The five stressors unique to firefighters are mentioned by Hildebrand (1984). They are the level of uncertainty, physical response to an alarm, interpersonal tension, exposure to human tragedy and fear are consistent to the level and occurrence of stressors amongst firefighters within the Metropolitan municipality. There are different theories in terms of the influence and the measurement strategies of occupational stress. The idea was to probe the depth of stress experienced and the type of evidence provided in terms of work stress and well-being. Dewe, O'Driscoll, and Cooper (2012) adopted theories and their own particular focus was generally structured around a common set of components that are linked together with a relationship that is process-oriented.

Psychological theoretical perspectives such as the Transactional model of stress, Person-Environment Fit, Job demands-control theory and finally the Demand-Control-Support theory (DCS) and Effort-Reward imbalance reward theory (ERI) explain the occurrence of occupational stress. The imbalance effort-reward (I-E-R) perspective by Dewe, O'Driscoll, and Cooper (2012) is consistent with the occurrence of occupational stressors amongst firefighters within the Metropolitan municipality. This theory suggests that extrinsic effort (from external pressures) and intrinsic effort (internal motivations/work "over commitment") and low levels of reward (pay, job security, and recognition and promotion prospects) significantly predict negative health outcomes. Reward is predicted to buffer against the negative effect of efforts on health outcomes.

6.2.1.3 Specific Aim 3

Conceptualise the implications of the relationship between EI and occupational stress amongst firefighters in a metropolitan municipality from a theoretical perspective.

The third aim was to determine the nature of the relationship between EI and occupational stress amongst firefighters in a metropolitan municipality, which was achieved in the integration section of Chapter 3. The relationship between these two variables for the firefighters was established bearing in mind the theoretical integration of the perspectives. These perspectives include emotions Landa et al. (2008) which have an effect on work outcomes, and health which is defined as the bio-and psychosocial well-being of the individual (Houtman et al., 2007), with respect to the influence of EI on health. Furthermore, it is indicated that EI has a mediating role in the relationship between psychological health and stress.

(Landa et al., 2008)Landa et al. (2008) further indicate that factors that define perceived EI (attention to the emotions, emotional clarity and emotional repair) also have differential effects on health, strategies for dealing with stress and job satisfaction. In the same vein, people who score high in the factor “attention to emotions” report more physical symptoms, depression and anxiety than individuals who obtain a low score in this factor, since the latter do not consider their affective states relevant and they do not use that information to carry out effective regulation strategies. The conclusion reached with regard to the relationship between occupational stressors and EI is that people with high EI are able to deal with environmental demands better than people who score low in this variable.

6.1.1.4 Specific Aim 4

Determine theoretically the role of the biographical variables (age, gender, ethnicity, marital status, qualifications, job experience and job title) in respect of emotional intelligence and occupational stress amongst firefighters in a metropolitan municipality.

The fourth aim was achieved in both chapters 2 and 3. The literature review focused on the theoretical roles of the biographical variables (age, gender, ethnicity, marital status, qualification, job experience and job title) in respect of the variables emotional intelligence and occupational stressors. The biographical variables age, gender, ethnicity, marital status, qualifications and job experience have shown to have a significant relationship with Emotional Intelligence. Studies have shown that women generally have higher scores in EI than men, however these differences occur mainly

in the perception of emotions subscale (and not in the overall EI score). Based on research findings provided by the Reuven Bar-On EI of older groups usually scored significantly higher than the younger groups and respondents in their late 40s obtained the highest mean scores (Bar-On et al., 2007).

Studies have shown that having prior working experience in the industry did not have any significant effect on the level of EI. Madahi and Samadzadeh (2013) conducted a study, which shows the significant difference between single and married individuals in EI. The biographical variables age, gender, ethnicity, marital status, qualifications and job experience have shown to have a significant relationship with Occupational stress. Studies have shown that women appear to experience significantly higher levels of occupational stress. It is highlighted in the literature that the older age groups, 40-49 and 50 years and above reported the highest stress scores and it has been shown that married employees tend to experience more stress due to the fact that they have to balance the work and family life. It has been highlighted that people with higher education levels are more optimistic and have more resources to cope with stressful situations than people coming from a lower socio-economic status and with a lower level of education and lastly employees who had worked for more than twenty years reported to have the highest levels of occupational stress.

For the purpose of this study age, job experience, job title and qualifications have shown to have a significant relationship with emotional intelligence, and there was not a significant relationship found between age, qualifications and job title and occupational stress, however a significant positive relationship were found between job experience and occupational stress.

6.1.1.5 Specific Aim 5

Determine the implications for Industrial Psychology practices and future research

In terms of the literature study, the following conclusions are drawn in this section regarding the implications for Industrial Psychology and future research:

Health promotion and effective health management must always form an integral part of human resources and business management to ensure good quality work life as well as to fulfil the needs and expectations of individuals and organizations at large.

Firefighting is a physically and psychologically demanding profession with many inherent risks, including the development of mental health symptoms such as chronic job stress which is associated with a range of physical (e.g. sleep deprivation), psychological (e.g. depression), social (e.g. interpersonal conflict), and behavioural (e.g. alcohol and other drug abuse) health problems (Noblet, 2003). Occupational stress is contributing to a number of outcomes, which are critical to organisational success, including absenteeism, labour turnover and job performance. Firefighters find themselves exposed to a number of workplace issues such as to be in constant anticipation of death and injury while responding to an emergency fire call.

It is very imperative for management to understand and familiarize themselves with the key aspects of stress in the workplace, to enable them to identify and assist psychologically, socially and behaviourally challenged firefighters by developing strategies that build, motivate and encourage them to perform their duties to the best of their abilities. Knowledge on the relationship between the two variables EI and Occupational stress can provide insight and guidance on how to formulate strategies and interventions aimed at reducing stress levels of firefighters and its associated costs within the municipality as well as in all the other fire stations in the country. Emotionally intelligent firefighters experience less stress and the human resource department can introduce EI assessments for newly appointed recruits as well as existing employees to enable them to assist and encourage firefighters, which in return will improve job satisfaction, lower the levels of depression and suicide, reduce absenteeism and reduce labour turnover as well as substance abuse. The Bar-On Emotional Quotient Inventory can be used during the selection and recruitment process to enable human resource personnel to select the most suited emotionally intelligent candidates which will enable the municipality to cut the costs and retaining core, efficient and knowledgeable employees. (Landa et al., 2008)

6.2.2. Conclusions regarding the empirical study

The empirical aims of the research and hypotheses are presented and the conclusions are drawn as follows:

The empirical aims of the research and hypotheses focused on five specific aims relating to research:

- (1) To empirically determine the relationship between emotional intelligence and occupational stress amongst firefighters in a metropolitan municipality;
- (2) Empirically determine whether firefighters from the various demographic groups differ significantly relating to emotional intelligence and their perception of occupational stress as manifested within a sample of firefighters in a metropolitan municipality.
- (3) Empirically determine the relationship between the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title), emotional intelligence and occupational stress amongst firefighters in a metropolitan municipality;
- (4) Empirically determine whether the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title) and EI significantly predict occupational stress amongst firefighters in a metropolitan municipality;
- (5) To formulate recommendations for the practice of Industrial and Organisational Psychology and well-being of firefighters and to suggest further research strategies based on the findings of the research.

6.2.2.1. Specific aim 1

To empirically determine the relationship between emotional intelligence and occupational stress amongst firefighters in a metropolitan municipality.

The aim was achieved in chapter 5 by evaluating the relationship between emotional Intelligence and occupational stress amongst firefighters in a metropolitan municipality. On average the participants on the sample have shown to have a negative relationship between occupational stress and emotional intelligence, which means that firefighters who are emotionally intelligent experienced less stress in the workplace as compared to their fellow colleagues who scored less on EI.

The work stress levels of the firefighters were between low and high score ranges depending on the type of the stressor. The interpretations were based on the guidelines indicated by Taylor and de Bruin (2006) assisting the researcher to conclude that the

most perceived stress contributors for the firefighters could be due to their work environment, lack of career mobility and other factors.

6.2.2.2 Specific aim 2

Empirically determine whether firefighters from the various demographic groups differ significantly relating to emotional intelligence and their perception of occupational stress as manifested within a sample of firefighters in a metropolitan municipality

Based on the empirical study work experience has shown to have a statistically significant positive correlation with Interpersonal Composite Scale. Firefighters who have been working for the department for several years have good interpersonal relationships with each other, however all the other Composite scales of the EQ-I (Self-Perception, Self-Expression, Decision making and Stress Management) yielded an insignificant relationship with biographical data. Career advancement and job experience have shown to have a positive correlation, which entails that as firefighters advance with their careers so does their experience increase within the field. Furthermore, the research findings of all the remaining subscales of the Sources of Work Stress Inventory (general work stress, role ambiguity, relationships, tools and equipment, job security, lack of autonomy, Work/ Home Interface and workload yielded an insignificant relationship with the biographical data.

6.2.2.3 Specific aim 3

Empirically determine the relationship between the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title), emotional intelligence and occupational stress amongst firefighters in a metropolitan municipality

Based on the findings of the empirical study in chapter 5, this aim was achieved with the following conclusions drawn regarding the role of biographical variables in relation to emotional intelligence and occupational stress:

- (1) The firefighters did not provide their actual age in the biographical questionnaire, but provided age in categories. The results show that there is a

significant positive relationship between age, job title and job experience, which entails that the desire to be promoted and getting higher ranks within the fire service increases with age. There are no significant differences between age and emotional intelligence and occupational stress. The results further shows that job experience increases as firefighter's ages;

- (2) Qualifications and job title yielded a positive relationship, which entails that firefighters associate qualification improvement with the hope to be promoted at work. There is no significant relationship between qualifications and emotional intelligence and occupational stress;
- (3) There is no significant relationship between job title and emotional intelligence and occupational stress; and
- (4) There is a significant positive relationship between job experience and motional Intelligence Composite Scale (Interpersonal Composite Scale), which entails that as work experience increases so does good interpersonal relations between firefighters. There is a positive relationship between Work Experience and Occupational stress subscale (Career Advancement), indicates that as firefighters gain more experience so does their careers advances further within their work environment.

6.2.2.4 Specific aim 4

Empirically determine whether the demographic variables (age, gender, ethnicity, marital status, qualifications, job experience and job title) and EI significantly predict occupational stress amongst firefighters in a metropolitan municipality.

Different biographical data (age, gender, ethnicity, marital status, qualifications, job experience and job title) have been analysed with the subscales of the SWSI and the composite scales of the EQ-I 2.0. The majority of the SWSI subscales are not statistically different from 0, which indicates that there is no evidence of a statistically significant relationship among the variables. However, career advancement and work experience have shown to have a statistically significant positive relationship with job experience.

6.2.2.5 Specific aim 5

To formulate recommendations for the practice of Industrial and Organisational Psychology and well-being of firefighters and to suggest further research strategies based on the findings of the research

Based on the empirical study it is indicated that only a fraction of firefighters feel good about themselves, feel positive about life, are in touch with their emotions, recognise and predict emotions and detect nuances between different emotions, however 50% of the sample revealed that firefighters may not be in touch with feelings, may lack inner strength, confidence and emotions. Moreover, emotions may elude or confuse them, so that they do not understand their emotional landscape or make good use of their abilities. Firefighters also struggle to express their own thoughts and feelings, may be emotionally dependant, and may find it difficult to describe how they feel. Expressing emotions may not be constructive.

The study reveals that firefighters lack appropriate social skills and are withdrawn. They struggle to understand and relate to others and do not see how own emotions affect others. Relationships may be of a lower quality or depth and may not be sensitive to the feelings of others; however, a small fraction of firefighters revealed that they seek and maintain high calibre relationships, are sensitive and care for the needs of others. They can predict how own emotions affect others, are sociable, easy to approach and feel the responsibility to contribute to society, social group or a team. The sample of firefighters also reported that they might not use emotional information effectively, since emotions may hinder decision-making, as they may fall victim to rash behaviours/decisions, could struggle to remain objective and may be derailed or biased by emotions. As far as stress management is concerned firefighters reported that they struggle when faced with stress or change, may often feel anxious or stressed and may be rooted in tradition; they are resistant to change, pessimistic about the future and less hopeful and resilient.

It can be concluded that industrial psychologists and human resource practitioners should consider introducing new ways and strategies aimed at reducing the stress levels of firefighters within the municipality. The use of Bar-On Emotional Quotient Inventory can be introduced in the Employee Assistance Programmes to assist

management to assess the level of emotional intelligence of their firefighters and try to develop new innovative strategies on how to enhance their effectiveness in the workplace and their general wellbeing. Human Resource Managers might must also consider making use of the instrument for promotions, as well as during the recruitment processes as it will enable them to appoint candidates who score high in emotional intelligence, which entails that the municipality will be able to cut the costs in the end.

6.2.3 Conclusions regarding the central hypothesis

The central hypothesis of this study was formulated to explore the substantial relationship between occupational stress and emotional intelligence. The empirical findings of the research yielded a statistically significant relationship between the Sources of Work Stress Inventory subscales and the Composite scales of the Bar-On Emotional Quotient Inventory (EQ-I 2.0). The findings were consistent with the hypothesis specified that the interaction effect between Emotional Intelligence (independent variable) and occupational stress (dependent variable), predict a significantly negative relationship between the two variables amongst firefighters, and the central hypothesis is therefore accepted.

6.2.4 Conclusions based on Industrial and Organisational Psychology

The conclusions in this sections are about the contributions to the field of Industrial and Organisational Psychology. The findings of the literature review and empirical results contributed to the field of Industrial and Organisational Psychology. The literature review gave insight into both constructs of EI and occupational stress. The findings of this study indicate that the majority of the firefighters scored below average, which means that they do not have a solid understanding of themselves and their emotions. They cannot openly and honestly express how they feel and think, do not have a healthy network of relationships, do not feel competent, calm and grounded in their own abilities and lastly they lack confidence and the ability to be resilient when faced with adversity. These research findings contribute to the field of Industrial and Organisational Psychology by focusing on the unique occupational industry of fire departments in the metropolitan municipality.

The findings of the research are aligned with those of Schmidt and Mckune (2012) who discovered that firefighting is a long-standing occupation and many fire service departments in South Africa do not prioritise the health and fitness of their firefighters. These findings may assist the field of Industrial and Organisational Psychology to gain more insight on how EI and occupational stress as perceived by firefighters within the firefighting industry. Knowledge of these two constructs emotional intelligence and occupational stress and the nature of their relationship must be considered, in order to find strategies and ways aimed at improving the well-being of firefighters in the workplace as well as in their everyday lifestyles. Key factors related to occupational stress can be identified first and then introduce the EQ-I (2.0) assessments to proactively determine how best can the department be of assistance to decrease the level of stress among its firefighters and manage the costs it is associated with.

South Africa is a very diverse country with a history of inequality and a high rate of unemployment, which creates an unfavourable huge employment demand and job seekers take whatever comes their way. Firefighting courses in South Africa are offered in many private colleges over a period of three months and the unemployed see it as a quick and only way to get the certificate and employment without taking cognisant consideration of what the job entails.

Industrial Psychologists in association with the test developers can introduce the EQ-I (2.0) assessment instrument at the municipality colleges to be taken by new recruits so that human resource practitioners can make well informed decisions to appoint men and women of all races who are willing and passionate about helping others.

The human resource practitioners and industrial psychologists must come up with strategies on how to best compensate firefighters equally because the salary levels differs significantly with other metropolitan municipalities which in turn creates job dissatisfaction, absenteeism, depression and even labour turnover.

6.3 LIMITATIONS OF THE STUDY

6.3.1 Limitations of the literature review

In this section of limitations of the study, the focus will be on the literature review. The following limitations were encountered in relation to the literature review:

- (1) There is a large body of research regarding each construct, occupational stress and EI but limited research on the relationship between the two constructs globally and in South Africa. This was challenging for the researcher to report on a wider variety of research findings;
- (2) There is a lack of research on only firefighters in South Africa and most researchers conducted studies on emergency workers (both Firefighters and Paramedics), that limited the researcher to report on a wider variety of research findings; and
- (3) The construct emotional intelligence is well researched in globally and locally, but very limited research was done on emergency workers let alone firefighters.

6.3.2 Limitations of the empirical study

In this section of limitations of the study, the focus will be on the empirical study. The following limitations were encountered in relation to the empirical study:

6.3.2.1 The measuring instrument

The use of a self-report measure could offer an explanation into an explanation of some of the statistically insignificant results obtained in this study. The participants could have exaggerated or underplayed their psychological strain. The Bar-On Emotional Quotient Inventory (EQ-I 2.0) consists of 133 questions, which could be too long and the participants could easily lose interest and obtain negative impact on the research findings. Furthermore, the use of self-report measures inhibits research participants from fully expressing themselves, which then restricts the researcher from obtaining richer data. The inclusion of qualitative questions would have provided greater insight into the relationship between the variables.

6.3.2.2 Generalisability

The study was limited to the firefighters in the metropolitan municipality, and it makes difficult to generalize the findings to firefighters countrywide. The study is restricted to firefighters and can make it difficult to generalise the findings to other emergency workers due to their different nature of their jobs. Due to the different types of jobs they are responsible for, the research findings could be different. Furthermore, a non-

probability convenient sample was used in the study, and the researcher cannot draw inferences from the sample as the results yielded from the research does not reflect the views of other firefighters within the very same municipality.

6.3.2.3 Race

The majority of the participants were African and it will make it difficult to make comparisons with other races whose participants were very few in the study. It can present many challenges to generalize between races because of their different cultures, upbringing, abilities, behaviour, understanding and religious beliefs among others. Thus, the sample of the study is not well balanced demographically as the high rate of participants were African as compared to coloured, Asian and white respondents and given this inherent characteristic of the sample at hand the validity is of major concern as the participants are not a true approximate of the population of interest.

6.3.2.4 The sample

The main limitation of this study is the sample size of (N=150) which was recruited from seven fire stations out of the 21 the city has, which reduces the chances of generalizing the findings to the city as a whole. Thus, the sample size is one of the limitations of this study and was selected based on convenience, accessibility and availability of time as firefighters can be urgently called at any time for an emergency. A larger sample could have given the researcher more insight into firefighters experience with occupational stress and those who are emotionally intelligent.

Also, the respondents did not provide their actual age in the biographical questionnaire, but age categories. Therefore, the researcher was not given a clear indication of the actual ages of the participants. Despite the empirical limitations indicated on this study, the relationship between the two variables emotional intelligence and occupational stress does have negative relationship, can be explored for future research in order to find ways on how best to assist firefighters to be efficient, effective and help reduce the costs associated with stress within the municipality.

6.4 RECOMMENDATIONS

This section addressed the following specific literature review and empirical aims of the research. The aims were to:

- determine the implications for industrial psychology practices and future research.
- Which recommendations can be provided for the practice of Industrial and Organisational Psychology and the well-being of firefighters, and what research strategies can be suggested based on the findings of the research?

6.4.1 Recommendations for Fire Service Departments

The following recommendations can be made (adapted from Cilliers & Flotman, 2016) to assist fire service departments to reduce or manage some of the work stress experienced by its firefighters on a daily basis:

Psychological well-being

The municipality management is well aware that in the 21st century, the world of work is known for its increasing level of stress and firefighters are even more affected. Coping with these demands will result in positive stress or eustress, manifesting as employees psychological wellbeing and defined as having a proactive stance towards achieving optimal physical, mental and emotional well-being. Human Resource practitioners should introduce a Positive Psychology model, which is described as the scientific paradigm studying what enables individuals and institutions to flourish by focussing on the expression of potential through positive well-being, positive traits, positive emotions, strengths, virtues and values towards optimal human functioning. The application of this model will improve effectiveness and quality of life of the firefighters in the fire service departments.

The effort-reward imbalance

The municipality management can reduce the high level of absenteeism and labour turnover by introducing the effort-reward imbalance, which states imminent or delayed rewards that significantly reduces the adverse impact of expedition, meaning

that firefighters would make significant sacrifices if they had a perception of possible future reward.

The demand-and control model

The municipality management should look into the responsibilities they place on firefighters and analyse if they can be able to achieve the tasks assigned to them, as the demand and control model states that autonomy over tasks and responsibilities safeguards firefighters from excessive and unnecessary strain.

Positive Institutions

The municipality management must ensure that its fire service department has a purpose and a vision (of the moral goal of the institution), provide safety against threat, danger and exploitation. The seniors within the fire service departments must ensure fairness in having rules governing reward and punishment and humanity in providing care, concern and dignity; and where firefighters, groups, organisations, communities and society are all treated as equals (Rothmann, 2014; Rothmann & Cooper, 2015).

The demands-Resource Model

Every occupation has its own specific job demands that are physical, psychological, social and organisational and pose a risk, management can ensure that job resources are sustainable and functional to achieve work goals, reduce job demands and stimulate motivation, personal growth, development and psychological well-being (Demerouti & Bakker, 2011).

6.4.2 Recommendations for firefighters

The following recommendations pertaining to the firefighters within the Metropolitan Municipality could be made (adapted from Damásio, Borsa & da Silva, 2011):

- (1) Firefighters can use or try to employ any of the recommendations suggested by the researcher to them to cope with their everyday activities;
- (2) Firefighters must be resilient, persevere and patient at all times. According to Damásio, Borsa and da Silva (2011), resilience means that they will be able to moderate the negative effects of stress and promote positive adaptation in their

daily activities. Knowledge of the five common components of resilience that firefighters can consider to inform strategies in order to improve their well-being. Equanimity is a balanced perspective of life and experiences, and can be viewed as sitting loose and taking what comes, thus moderating the extreme responses to adversity, a construct often related to the sense of humour;

- (3) Perseverance is the ability to keep going despite setbacks, generally found in people who tend to recognize and rely on their personal strengths and capabilities;
- (4) Self-reliance is considered a self-efficacy belief specially linked to problem-solving skills. In general, this ability achieved with life experiences, and most frequently encountered in people who comprehend and accept their own capabilities and limitations;
- (5) Meaningfulness is the belief that life has a purpose and recognition that there is a reason for which to live. Finally, existential aloneness is the realization that each person is unique and that although some experiences can be shared, others must be faced alone;
- (6) Firefighters should constantly remind themselves why they chose this career, which is to assist the community of Tshwane at large when faced with an emergency. They should maintain an open and honest work-related relationship with their superiors and management to avoid unnecessary tensions and conflicts. Firefighters must explore other possible risk factors associated with stress post a duty related incident. This insight will assist management to be aware of any stress related disorder and ensure that coping strategies are put in place. Firefighters need to gain awareness about what occupational stress is and what it entails, how stress affects an individual's wellbeing in the workplace and even at home. Firefighters can attend workshops that will inform them about emotional intelligence and how to cope with stress post emergency calls.

6.4.3 Recommendations for future research

Although this study has shed some light in certain areas of the relationship between occupational stress and emotional intelligence, the following recommendations are made for future research:

It is worth noting that there is a need for future research for the relationship between both constructs, emotional intelligence and occupational stress. It is recommended that future studies address the limitations identified in this study. Future research could explore a qualitative approach that will offer the investigation a more meaningful material that would lay basis for future research. Thus, a replication of this study is encouraged, and the focus should be to obtain a larger sample to improve external validity and ensure that the findings can be inferred on the population of firefighters within the municipality as well as other municipalities across the country.

The empirical findings of this study has confirmed that there is a negative relationship between occupational stress and emotional intelligence, and the replication of this study can further interrogate the relationship between emotional intelligence and occupational stress as well as biographical data of firefighters to fully substantiate the essence of these constructs in the South African context.

6.5 INTEGRATION OF THE STUDY

The dissertation explored the relationship between emotional intelligence and occupational stress of firefighters within the metropolitan municipality. Firefighters provide many essential public services, including responding to fire accidents, medical emergencies, traffic accidents and natural disasters. Due to the unique nature of their work, firefighters often report elevated levels of stress. Thus, the level of traumatic incidents faced by firefighters should be of great concern to the municipality.

The literature review suggests that external pressures, internal motivations, and low levels of reward, which predicts negative health outcomes, cause the occurrence of occupational stress amongst firefighters. These outcomes lead to absenteeism, labour turnover, substance abuse etc. The findings of this study confirmed that emotional intelligence is an important variable critical for the successful functioning of firefighters at the metropolitan municipality. Concerning wellness in the fire service includes the control, diffusion, and management of firefighter stress reactions, research has shown that when firefighters learned to manage their stress they showed better physical and psychological wellness, higher morale, and less absenteeism. Firefighters who scored high in emotional intelligence experience less stress, better physical and psychological wellness as compared to those who score low on EI.

The empirical findings provided a statistically significant negative relationship between the two variables; these findings were consistent with the hypothesis. In addition, the significant differences were found between some biographical variables in relation to their levels of emotional intelligence and occupational stress, however most of the biographical variables confirmed insignificant relationships with both of the variables and the findings suggests that they might be other possible variables that have substantial impact on occupational stress and emotional intelligence.

6.6 CHAPTER SUMMARY

In summary, chapter 6 focused on the conclusions drawn on the study related to defined aims, and a discussion based on the limitations of both the literature and empirical study. Recommendations were made and suggestions offered for Industrial Psychologists, fire service departments, firefighters as well as for future research. Finally, the integration of the study was discussed confirming the negative relationship between the emotional intelligence and occupational stress amongst firefighters within the Metropolitan Municipality.

REFERENCES

- Adams, S., (2015). The Most Stressful jobs of 2015. *The Forbes Education Coverage*, 7 January.
- Armstrong, D., & Huffington, C., (2018). *Emotions in organizations: disturbance or intelligence?* (First Ed). London, Routledge.
- Bar-On, R. (1997). *BarOn Emotional Quotient Inventory: A Measure of Emotional Intelligence: User's Manual* by Reuven Bar-On.
- Bar-On, R. (2006). The Bar-On model of emotional-social intelligence (ESI). *Psicothema*, 18.
- Bar-On, R. (2010). Emotional intelligence: an integral part of positive psychology. *South African Journal of Psychology*, 40(1), 54-62.
- Bar-On, R., Brown, J., Kirkcaldy, B. D., & Thome, E. (2000). Emotional expression and implications for occupational stress; an application of the Emotional Quotient Inventory (EQ-i). *Personality and individual differences*, 28(6), 1107-1118.
- Bar-On, R., Marea, K., & Elias, M. J. (2007). *Educating people to be emotionally intelligent*: Greenwood Publishing Group.
- Breed, M., Cilliers, F., & Visser, D. (2006). The factor structure of six salutogenic constructs. *SA Journal of Industrial Psychology*, 32(1), 74-86.
- Butler, P.M., (2018). Stress: a concern for everyone. National Research Bureau, 79(11), 11-14
- Byrne, B. P. (2015). Most stressful jobs in the united states of america [209]. Retrieved from www.vocativ.com/222492/americas-most-stressful-jobs
- Carlisle, C. F. (1999). *The role of occupational stress in the contemporary fire service: psychological stress, its causation, identification, treatment, reduction, and resolution*: National Fire Academy.
- Caspi, A., Houts, R. M., Belsky, D. W., Goldman-Mellor, S. J., Harrington, H., Israel, S., & Moffitt, T. E. (2014). The p factor: one general psychopathology factor in the structure of psychiatric disorders?. *Clinical Psychological Science*, 2(2), 119-137.
- Cooper, C. L., Sloan, S. J., & Williams, S. (1988). *Occupational stress indicator*: Nfer-Nelson Windsor.

- Couper, G. E., Tesol, C., & Karimi, L. Heroes at risk: An Overview of How Emotional Intelligence Can Reduce Death and Injury for Firefighters.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *psychometrika*, 16(3), 297-334.
- De Bruin, G. P., & Taylor, N. (2005). Development of the sources of work stress inventory. *South African Journal of Psychology*, 35(4), 748-765.
- De Klerk, S. M. (2013). *Investigation of leadership empowerment behaviour, psychological empowerment, work engagement and turnover intention in a chemical industry*. North-West University.
- Dewe, P. J., O'Driscoll, M. P., & Cooper, C. L. (2012). Theories of psychological stress at work *Handbook of occupational health and wellness* (pp. 23-38): Springer.
- Dumitrescu, C. (2014). Influence of psychotherapeutic interventions on occupational stress. *Procedia-Social and Behavioral Sciences*, 127, 696-701.
- Dunaway, M. M. (2014). Explaining Implicit and Explicit Affective Linkages in IT Teams: Facial Recognition, Emotional Intelligence, and Affective Tone.
- Fayombo, G. A. (2012). Relating emotional intelligence to academic achievement among university students in Barbados. *The international Journal of Emotional education*, 4(2), 43-54.
- Fernández-Berrocal, P., Cabello, R., Castillo, R., & Extremera, N. (2012). Gender differences in emotional intelligence: the mediating effect of age. *Psicología Conductual*, 20(1), 77.
- Fernández-Berrocal, P., & Extremera, N. (2006). Emotional intelligence: A theoretical and empirical review of its first 15 years of history. *Psicothema*, 18.
- Goleman, D. (1998). *Working with emotional intelligence*: Bantam.
- Goleman, D. (2001). An EI-based theory of performance. *The emotionally intelligent workplace: How to select for, measure, and improve emotional intelligence in individuals, groups, and organizations*, 1, 27-44.
- Gomm, R. (2008). *Social research methodology: A critical introduction*: Palgrave Macmillan.

- Gramstad, T. O., Gjestad, R., & Haver, B. (2013). Personality traits predict job stress, depression and anxiety among junior physicians. *BMC medical education*, 13(1), 150.
- Guidotti, T. L. (1992). Human factors in firefighting: ergonomic-, cardiopulmonary-, and psychogenic stress-related issues. *International Archives of Occupational and Environmental Health*, 64(1), 1-12.
- Harris, M. B., Baloğlu, M., & Stacks, J. R. (2002). Mental health of trauma-exposed firefighters and critical incident stress debriefing. *Journal of Loss & Trauma*, 7(3), 223-238.
- Hokanson, M., & Wirth, B. (2000). The critical incident stress debriefing process for the Los Angeles County Fire Department: Automatic and effective. *International Journal of Emergency Mental Health*, 2(4), 249-258.
- Houtman, I., Jettinghoff, K., Employment, T. W., & Cedillo, L. (2007). Raising awareness of stress at work in developing countries *Protecting workers's health*
- Huang, G. D., Feuerstein, M., & Sauter, S. L. (2002). Occupational stress and work-related upper extremity disorders: Concepts and models. *American journal of industrial medicine*, 41(5), 298-314.
- Karter, M. J., & Stein, G. P. (2005). *US fire department profile through 2000*: National Fire Protection Association.
- Krishnakumar, R., & Lalitha, S. (2014). A Study on emotional intelligence and occupational stress. *International Journal of Multidisciplinary and Current Research*, 2, 21-24.
- Kuehl, K., Elliot, D., Goldberg, L., Moe, E., Perrier, E., & Smith, J. (2013). Economic benefit of the PHLAME wellness programme on firefighter injury. *Occupational medicine*, 63(3), 203-209.
- Lambert, J. E., Benight, C. C., Harrison, E., & Cieslak, R. (2012). The firefighter coping self-efficacy scale: measure development and validation. *Anxiety, Stress & Coping*, 25(1), 79-91.
- Landa, J. M. A., López-Zafra, E., Martos, M. P. B., & del Carmen Aguilar-Luzón, M. (2008). The relationship between emotional intelligence, occupational stress and health in nurses: a questionnaire survey. *International Journal of Nursing Studies*, 45(6), 888-901.

- Lindström, B., & Eriksson, M. (2005). Salutogenesis. *Journal of Epidemiology & Community Health, 59*(6), 440-442.
- Lowman, R. L. (1993). *Counseling and psychotherapy of work dysfunctions*: American Psychological Association.
- M.K.Loo*, S. M. A. a. N. S. a. A. R. (2015). The sources and the impacts of occupational stress among manufacturing workers. *International journal of current research and academic review, Special issue-22*, 166-173.
- Mark, G., & Smith, A. P. (2012). Effects of occupational stress, job characteristics, coping, and attributional style on the mental health and job satisfaction of university employees. *Anxiety, Stress & Coping, 25*(1), 63-78.
- Mayer, J. D., Caruso, D. R., & Salovey, P. (1999). Emotional intelligence meets traditional standards for an intelligence. *intelligence, 27*(4), 267-298.
- Mayer, J. D., & Salovey, P. (1993). The intelligence of emotional intelligence. *intelligence, 17*(4), 433-442.
- Mayer, J. D., Salovey, P., & Caruso, D. R. (2002). *Mayer-Salovey-Caruso Emotional Intelligence Test: MSCEIT. Item booklet*.
- Michael, G., Anastasios, S., Helen, K., Catherine, K., & Christine, K. (2009). Gender differences in experiencing occupational stress: the role of age, education and marital status. *Stress and Health, 25*(5), 397-404.
- Milen, D. (2009). The ability of firefighting personnel to cope with stress. *Journal of Social Change, 3*(1), 2.
- Morand, D. A. (2001). The emotional intelligence of managers: Assessing the construct validity of a nonverbal measure of “people skills”. *Journal of Business and Psychology, 16*(1), 21-33.
- Nabirye, R. C., Brown, K. C., Pryor, E. R., & Maples, E. H. (2011). Occupational stress, job satisfaction and job performance among hospital nurses in Kampala, Uganda. *Journal of nursing management, 19*(6), 760-768.
- Naudé, J., & Rothmann, S. (2003). Occupational stress of emergency workers in Gauteng. *SA Journal of Industrial Psychology, 29*(4), 92-100.
- NFPA, N. (2010). 750: Standard on Water Mist Fire Protection Systems. *National Fire Protection Association, Quincy, MA, USA*.

- Noblet, A. (2003). Building health promoting work settings: identifying the relationship between work characteristics and occupational stress in Australia. *Health promotion international, 18*(4), 351-359.
- Oginska-Bulik, N. (2005). Emotional intelligence in the workplace: Exploring its effects on occupational stress and health outcomes in human service workers. *International Journal of Occupational Medicine and Environmental Health, 18*(2), 167-175.
- Oosthuizen, R. M., & Koortzen, P. (2007). An empirical investigation of job and family stressors amongst firefighters in the South African context. *SA Journal of Industrial Psychology, 33*(1), 49-58.
- Plessis, M. d., & Smith, C. A. (2013). Stress in South Africa: Medical Nutritional Institute.
- Robbins, S., Judge, T., Odendaal, A., & Roodt, G. (2009). Organisational Behaviour: Global and South African Perspectives. Cape Town: South Africa: Pearson Education South Africa.
- Russell, J., & Barchard, K. (2002). Toward a shared language for emotion and EI. *The wisdom in feeling: Psychological processes in EI, 363-371*.
- Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, cognition and personality, 9*(3), 185-211.
- Siegrist, J., Wege, N., Pühlhofer, F., & Wahrendorf, M. (2009). A short generic measure of work stress in the era of globalization: effort–reward imbalance. *International Archives of Occupational and Environmental Health, 82*(8), 1005.
- Siu, O. I. (2002). Occupational stressors and well-being among Chinese employees: The role of organisational commitment. *Applied Psychology, 51*(4), 527-544.
- Solutions, A. M. (2013). Absence Management Survey. Retrieved from enquiries@dhs.net.au
- Souri, H., & Hasanirad, T. (2011). Relationship between resilience, optimism and psychological well-being in students of medicine. *Procedia-Social and Behavioral Sciences, 30*, 1541-1544.
- Sweeney, P. (2014). Grieving behind the badge. Retrieved from peggysweeney@sweeneyalliance.org

- Taap Manshor, A., Fontaine, R., & Siong Choy, C. (2003). Occupational stress among managers: a Malaysian survey. *Journal of managerial psychology, 18*(6), 622-628.
- Van Der Ploeg, E., & Kleber, R. J. (2003). Acute and chronic job stressors among ambulance personnel: predictors of health symptoms. *Occupational and environmental medicine, 60*(suppl 1), i40-i46.
- Van Zyl, E. (2002). The measurement of work stress within South African companies: a luxury or necessity? *SA Journal of Industrial Psychology, 28*(3), 26-31.
- Wagner, S. L., & Martin, C. A. (2012). Can Firefighters' Mental Health Be Predicted by Emotional Intelligence and Proactive Coping? *Journal of Loss and Trauma, 17*(1), 56-72.
- Welman, J. C., & Kruger, F. (2001). *Research methodology for the business and administrative sciences*: Oxford University Press.
- Zeidner, M., Matthews, G., & Roberts, R. D. (2004). Emotional intelligence in the workplace: A critical review. *Applied Psychology, 53*(3), 371-399.

THE RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND OCCUPATIONAL STRESS AMONGST FIREFIGHTERS IN A METROPOLITAN MUNICIPALITY

APPENDIX A: CEMS/IOP Research Ethics Review Committee Approval Letter



CEMS/IOP RESEARCH ETHICS REVIEW COMMITTEE

25 July 2016

Ref #: 2016_CEMS/IOP_066
Student #: 32834829
Staff #: N/A

Dear Margaret M Ngope,

Decision: Ethics approval

Cell no: 072 503 6074
E-mail: ngopemm@tut.ac.za

Supervisor: Prof R M Oosthuizen Co-supervisor: N/A

Proposal: The relationship between occupational stressors and emotional stressors amongst fire-fighters in a metropolitan municipality

Qualification: Postgraduate degree/Non-degree output/Commissioned research

Thank you for the application for research ethics clearance by the CEMS/IOP Research Ethics Review Committee for the above mentioned research. The application was reviewed in compliance with the Unisa Policy on Research Ethics by the committee on 14 July 2016.

The proposed research may now commence with the proviso that:

- 1) *The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.*
- 2) *Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the CEMS/IOP Ethics Review Committee.*
- 3) *An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.*
- 4) *The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.*



University of South Africa
Pretoria Street, Midlebury Ridge, City of Tshwane
PO Box 392 UNISA 9002 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

Note:

The reference number 2016_CEMS/IOP_066 should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the CEMS/IOP RERC.

Kind regards,



Dr Sonja Grobler
Chair: IOP Research Ethics Committee
Department of Industrial and Organisational Psychology
College of Economic and Management Sciences
AJH van der Walt Building, Room 3-76
+27 (0) 12 429 8272
Fax: 012 429 8368



Prof M T Mogale
Executive Dean
College of Economic and Management Sciences
AJH van der Walt Building, Room 05-04
Tel: 012 429 4805