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The Role of Social Support in the Relationship between Exposure to Traumatic Stressors and Posttraumatic Stress Symptoms in a Sample of Emergency Care Practitioners

Natascha Tanya Basedau

A dissertation submitted to the Faculty of Arts, University of the Witwatersrand, Johannesburg, in partial fulfillment of the requirements for the Degree of Master of Arts (Clinical Psychology)

Johannesburg, December, 2004

DECLARATION

I declare that this dissertation is my own, unaided work. It is being submitted for the Degree of Master of Arts (Clinical Psychology) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree at any other university or institution.

Natascha Tanya Basedau

_____day of_____, 2004

ABSTRACT

The present study served to investigate the way in which continuous exposure to potentially traumatic incidents impacts on the South African Emergency Care Practitioner (ECP). The study sought to investigate the presence of symptoms of posttraumatic stress (PTS) in the sample and the events which appear to pose the greatest threat to these ECPs' mental health. The notion that individuals exposed to the same traumatic stressors can present with very different posttraumatic responses has led to the acknowledgement that the relationship between exposure and PTS is a complex one. Studies have examined a multitude of variables believed to impact in some way on this relationship, with particular emphasis on individual appraisals and coping styles. Less attention has been afforded the role of social phenomena in the development of posttraumatic stress disorder (PTSD). The attention that has been afforded these phenomena has tended to examine social support as a unidimensional construct, and studies have often measured different social support conceptualisations. Utilising a recognised psychosocial framework, the present study sought to investigate the impact of social support in the relationship between exposure and PTS. It sought to examine three distinct facets of social support, namely: the appraisal of being supported, the perception of available supportive behaviours from family and friends, and an individual's orientation towards utilising support. The study used a cross-sectional, correlational design to investigate the relationships between exposure, PTSD symptoms and social support. The procedure involved the anonymous completion of several standardised self-report measures by 107 ECPs from Netcare 911, a private South African emergency care organisation. These measures included a revised version of the Paramedic Work Exposure Checklist (PWEC), the Revised Impact of Event Scale (RIES), the Social Support Appraisals Scale (SS-A), the Social Support Behaviours Scale (SS-B) and the Network Orientation Scale (NOS). The events that tended to be rated as having the most negative emotional impact among respondents involved assisting abused or injured children, witnessing the death or injury of a coworker, assisting victims of sexual assault, dealing with equipment failure or the incompetence of others and receiving inadequate or incorrect information when dispatched

on a call. The correlational analyses revealed that exposure to events rated as having a negative emotional impact was significantly and positively associated with symptoms of PTSD in the sample. Correlational analyses also revealed that each of the facets of social support measured was significantly negatively associated with symptoms of PTSD. The results indicate that the mode and source of support most significantly associated with symptoms of PTSD in the sample was the perception of available emotional support from friends. In spite of the direct relationships observed between symptoms of PTSD and the facets of social support examined, none of the social support facets investigated emerged as a significant buffer in the relationship between exposure and PTSD. The study highlights the need for additional research, including longitudinal investigation, into the role of multiple facets of social support in the relationship between exposure and PTSD. Some suggestions for future research and the practical application of the findings of the research are offered.

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TABLE OF CONTENTS

	Page
DECLARATION	i
ABSTRACT	ii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	v
LIST OF TABLES	x
CHAPTER 1: INTRODUCTION	1
CHAPTER 2: POSTTRAUMATIC STRESS DISORDER AND RELATED CONCEPTS	8
2.1 Introduction	8
2.2 Defining Posttraumatic Stress Disorder (PTSD)	8
2.3 Posttraumatic Stress and Stress	10
2.4 Epidemiology of PTSD	11
2.5 Theoretical Models of PTSD	12
2.5.1 The Psychodynamic Model	12
2.5.2 Horowitz's Information-Processing Model	13
2.5.3 Janoff-Bulman's Cognitive Appraisal Model	15
2.5.4 Green, Wilson and Lindy's Psychosocial Model	15
2.5.4.1 The Event	16
2.5.4.2 The Individual's Experience of the Event	19
2.5.4.3 Individual Characteristics	20
2.5.4.4 The Recovery Environment	21
2.6 Continuous and Complex PTSD	23
2.7 Secondary Traumatic Stress and Burnout	25
2.8 Partial PTSD	27

2.9 Conclusion 27
CHAPTER 3: SOCIAL SUPPORT 29
3.1 Introduction 29
3.2 Defining Social Support 29
3.3 Social Support and Stress 31
3.4 The Main Effect vs the Buffering Effect Debate 32
3.5 Social Support: Moderator, Mediator or Buffer? 35
3.6 Measures of Social Support 38
3.7 Modes of Social Support 40
3.8 Sources of Social Support 42
3.9 Social Support: Environmental or Individual Variable? 44
3.10 Vaux's Dimensions of Social Support 45
3.10.1 Appraisal of Support 46
3.10.2 Socially Supportive Behaviours 46
3.10.3 Network Resources 47
3.10.4 Network Orientation 48
3.11 Social Support and Posttraumatic Stress 49
3.12 Conclusion 52

CHAPTER 4: EMERGENCY CARE PRACTITIONERS (ECPs) 53
4.1 Introduction 53
4.2 Defining the term 'Emergency Care Practitioner' 53
4.3 Distinguishing between Emergency Care Qualifications 54
4.4 The Nature of Emergency Care 55
4.4.1 Emergency Care in South Africa 56
4.5 Defining Critical Occupations and Emergency Services Personnel 59
4.6 Stress in Critical Occupations 60
4.7 Traumatic Stress in Critical Occupations 64
4.7.1 Critical Incident Stress vs Cumulative Stress 66
4.7.2 Secondary Traumatic Stress 68
4.8 Traumatic Stress in Critical Occupations in South Africa 69

4.9 McCammon's Framework for a theory of Traumatic Stress Reactions in Critical Occupations 72
4.9.1 Event Variables 72
4.9.2 Individual Variables 74
4.9.3 Job and Organisational Variables 75
4.9.4 Mediating Variables 76
4.10 Social Support in Critical Occupations 79
4.11 Conclusion 83

CHAPTER 5: METHOD 85
5.1 Rationale 85
5.2 Aim 86
5.3 Research Questions 86
5.4 Sample 87
5.5 Measuring Instruments 88
5.5.1 Biographical Data 88
5.5.2 Social Support Appraisals Scale (SS-A) 88
5.5.3 Social Support Behaviours Scale (SS-B) 89
5.5.4 Network Orientation Scale (NOS) 90
5.5.5 Revised Paramedic Work Exposure Checklist (RPWEC) 90
5.5.6 Revised Impact of Event Scale (RIES) 92
5.6 Research Procedure 95
5.7 Research Design 96
5.8 Data Analysis 96
5.8.1 Descriptive Statistics 96
5.8.2 Internal Reliability Analyses 97
5.8.3 ANOVA and 't'-Tests 97
5.8.4 Correlations 97
5.8.5 Partial Correlations 98
5.8.6 Multiple Regression 98

5.9 Ethical Considerations 98
5.10 Conclusion 99

CHAPTER 6: RESULTS 100
6.1 Introduction 100
6.2 Descriptive Statistics and Qualitative Findings 100
6.2.1 RPWEC Descriptive Statistics 100
6.2.2 Qualitative Findings 105
6.2.3 RIES Descriptive Statistics and Incidence of PTSD in the Sample 106
6.2.4 SS-A, SS-B and NOS Descriptive Statistics 108
6.3 Reliability Analyses 110
6.4 Biographical Variables 111
6.5 Correlations 114
6.6 Partial Correlations 117
6.7 Multiple Regression 118
6.8 Summary of findings 122

CHAPTER 7: DISCUSSION 124
7.1 Introduction 124
7.2 Exposure in the Sample 124
7.3 Symptoms of PTSD in the Sample 129
7.4 Social Support in the Sample 133
7.5 Internal Reliability of the Scales Employed 134
7.6 Biographical Variables 134
7.6.1 Gender, Age, Marital Status and Rank 134
7.6.2 Prior Counselling 135
7.6.3 Station 136
7.6.4 Length of Service 138
7.7 Relationships between the Social Support Dimensions 138
7.8 Relationship between Exposure and PTSD Symptoms 139

7.9 Relationship between Social Support and Exposure 140
7.10 Relationship between Social Support and PTSD Symptoms 141
7.11 Impact of Social Support within the Exposure-PTS Relationship 143
7.12 Relative Contributions of Exposure and Social Support in Predicting Variance in PTSD Symptoms 145
7.13 Relationship between the Modes and Sources of Social Support and PTSD Symptoms 146
7.14 Conclusion 148

CHAPTER 8: CONCLUSION 149
8.1 Introduction 149
8.2 Limitations of the Research 149
8.3 Recommendations for Future Research 151
8.4 Recommendations for Interventions among ECPs 152
8.5 Conclusion 155

REFERENCES 157

APPENDICES
APPENDIX I Questionnaire

LIST OF TABLES

		Page
Table 6.1	Descriptive Statistics for the RPWEC	101
Table 6.2	RPWEC Frequency Table	101
Table 6.3	Descriptive Statistics for the RIES	106
Table 6.4	PTSD Cut-Offs	107
Table 6.5	Descriptive Statistics for SS-A, SS-B and NOS	109
Table 6.6	Cronbach Alpha Co-Efficients	110
Table 6.7	RIES Statistics by Station	112
Table 6.8	Whole Scale Pearson Correlations	115
Table 6.9	Subscale Correlations	116
Table 6.10	First Order Partial Correlations	118
Table 6.11	Whole Scale Multiple Regression	119
Table 6.12	Social Support Subscale Multiple Regression	121

CHAPTER 1: INTRODUCTION

"The blood and the brains….that never bothered me, as to me blood is blood whether it is a goat's blood or a woman's blood, or whether it is a pig's brains or a woman's brain. It is the association of shattered lives; it is the association of excessive trauma and pain to something that you can feel, to something that you can associate with, and to something that has soul…..That is the trauma that ate me…." (Andy, an ex-paramedic, quoted in Davies, 2001, p.155)

Paramedical work, by its very nature, is stressful. When this work is carried out in a context of violence, where the scenes Emergency Care Practitioners (ECPs) are exposed to are often deliberate acts of human malevolence, and where the exposure is continuous, that stress can reach dangerous proportions. The stressors the South African ECP is required to confront on a daily basis include rendering aid to mutilated victims of homicide, witnessing multiple deaths, assisting children who have been injured, risking exposure to HIV/Aids and being exposed to hazardous chemicals and environments (Davidson, 2001; Georgiou & Ortlepp, 1998; Grigsby & McKnew, 1988). These traumata are not unique to the work of the South African ECP. Specific to the ECP working in the South African context, however, is the volume of these situations he/she is likely to be exposed to on any given day. With one of the highest road accident rates in the world and an alarming level of crime, the South African ECP responds to a particularly high call volume (statistics provided by Netcare 911, 2004).

With an average of 228 people per 100 000 killed on Gauteng roads every year (South African "Arrive Alive" Campaign, 2004), ECPs are required to attend to road injury and death at a rate considerably higher than that of their American (15 per 100 000) and British (6 per 100 000) counterparts (International Road Traffic & Accident Database, 2004). With an average of 46 people murdered per 100 000, South Africa also ranks as the crime capital of the world (World Health Organisation, 1998). Specific to the South African context is the number of crime-related injuries and deaths ECPs are required to attend to. It is widely accepted that the psychological sequelae following traumatic exposure are likely to be more

problematic when the trauma is viewed to have been a product, not of circumstance, accident or natural disaster, but of deliberate intent (Figley, 1985; Janoff-Bulman, 1985).

In addition to being exposed to traumata enacted with deliberate and violent intent, South African ECPs are often viewed themselves as legitimate targets for that intent. The South African ECP is required to tend to the wounded under threat of serious injury, to witness and treat co-workers harmed in the line of duty, and in many instances, to tend to the injured perpetrators of these crimes (Davidson, 2001; Davies, 2001). A recent newspaper article reports on an ECP raped at gunpoint after responding to a hoax call (The Star, 18th February, 2004, p.2). Statistics released by the National Health Department indicate that since the beginning of 2002, 43 provincial ambulances have been hijacked (The Sunday Times, 22nd February, 2004, p.7). This figure does not include the number of attempted hijackings during this period. Currently under discussion is the proposal that all provincial ambulances be accompanied by a police escort to ensure the safety of the paramedical staff and their ambulances (The Star, 18th February, 2004, p.2).

A commonplace assumption exists that ECPs are trained to deal with the horrific scenes of human injury and misery they encounter daily, together with a pervading belief that these gruesome scenes do not affect them (Mitchell & Dyregrov, 1993). The opening quote, from an ex-paramedic, serves as chilling testimony to the fact that ECPs are profoundly affected by the traumata their work exposes them to on a daily basis. The testimonies to emerge from recent studies into the phenomenon of traumatic exposure in the South African ECP population (Davidson, 2001; Davies, 2001; Georgiou & Ortlepp, 1998), suggest that the South African ECP is acutely at risk of posttraumatic stress disorder (PTSD) and that individual coping strategies employed to deal with this phenomenon are varied.

The notion that individuals exposed to the same traumatic stressors can present with very different posttraumatic responses has led to the acknowledgement that the relationship between exposure and posttraumatic stress (PTS) is a complex one (Bowman, 1999). Weiss, Marmar, Metzler and Ronfeldt (1995, p.361) propose that “much is known about the psychological processes that characterise those who have PTSD; considerably less is known

about the risk factors for developing problems after exposure to traumatic stress". Studies examining the sequalae of specific traumatic stressors have frequently focused on event variables regarding the type and frequency of exposure. Studies have examined the particular nature of traumatic exposure to rape (Kilpatrick, Veronen & Best, 1985), civil unrest (Esprey, 1996), shooting incidents (Creamer, Burgess, Buckingham & Pattison, 1993), terminal illness (Kazak, Barakat, Neeske, Christakis, Meadows, Casey, Penati & Stuber, 1997), motor vehicle accidents (Dougall, Ursano, Posluszny, Fullerton & Baum, 2001), disasters (Marmar, Weiss, Meltzer, Ronfeldt & Foreman, 1996), and combat-exposure (Frueh, Mirabella, Chabot & Fossey, 1994; Motta, 1993).

The manner in which individuals make sense of and cope with traumatic exposure has also emerged as a significant focus (Lazarus & Folkman, 1984). Studies have examined individual variables such as resiliency (Lam & Grossman, 1997), personality traits, particularly neuroticism (Hyer, Braswell, Albrecht, Boyd, Boudewyns & Talhert, 1994), pre-trauma difficulties (Dreeban, 1992; McFarlane, 1989), locus of control (Robinson, Sigman & Wilson, 1997), hardiness (Moran & Britton, 1994), and sense of coherence (Antonovsky, 1993). Trauma research has also focused on the role of defense mechanisms such as rationalisation (Davies, 2001), externalisation (Blake, Cook & Keane, 1992), dissociation (Carlier, Lamberts, Fouwels & Gersons, 1996), denial (Kopel & Friedman, 1997) and the use of humour to diffuse the intensity of the situation (Palmer, 1983).

Flannery (1990), drawing on Albee's (1980, in Flannery, 1990) competency-based model of stress, states that traumatic responses are mitigated by both personal control and the support of others. He adds that both are fundamental in the exposure-PTS relationship, and laments that research has tended to focus on personal control variables to the relative neglect of social support. Social support is viewed as a multidimensional and complex phenomenon, which defies a singular definition (Sarason, Sarason & Pierce, 1990; Vaux, 1987). The present study sought to investigate the complex phenomenon of social support by examining three distinct conceptualisations, namely the perceived appraisal of support (Vaux, Phillips, Holly, Thomson, Williams & Stewart, 1986), the perceived receipt of supportive behaviours

(Vaux, Reidel & Stewart, 1987) and orientation towards utilising support resources (Vaux, 1985).

Studies of the South African ECP exposed to continuous traumata have emphasised the beneficial effects of social support. One of the coping strategies reported most often by respondents in Davies' (2001) investigation of the coping strategies of South African ECPs was that of the turning to, and receipt of, social support. Davidson's (2001) research into the coping strategies of ECPs concluded that following exposure to trauma the seeking of social support is an adaptive coping strategy that is associated with lower levels of PTS symptoms. Other local studies into the factors mitigating the effects of traumatic exposure among emergency services personnel, such as Allen and Ortlepp's (1998) research among security guards and Basedau's (1999) study among police officers, have reported on the beneficial effects of social support within the exposure-PTS relationship.

In spite of the emphasis placed in these studies on the beneficial role of social support, there is much contention in the literature around the way in which social support impacts on the relationship between exposure to traumata and the development of PTS symptoms (Flannery, 1990). Much of the research in the field points to the beneficial effects of social support on both physical and psychological well-being (Allen & Ortlepp, 1998; Boscarino, 1995; Cohen & Wills, 1985; Flannery & Weiman, 1989 in Flannery, 1990; McCammon, Durham, Allison & Williamson, 1988; Sarason, Levine, Basham & Sarason, 1983; Sandler & Barrera, 1984; Terry, Nielson & Perchard, 1993; Wilcox, 1981). A few studies have emerged, however, which suggest, counterintuitively, that social support is in fact positively correlated with psychological distress (Esprey, 1996; Kaufmann & Beehr, 1986, cited in Buunk & Hoorens, 1992; Kaufmann & Beehr, 1989).

These contradictory findings suggest that it is unsafe to assume the positive impact of social support within the exposure-PTS relationship and that the exact nature and influence of the phenomenon of social support is still unclear to us. These contradictory findings demand explanation. Certain studies and methodological reviews suggest that the findings may reflect the different conceptualisations of social support operationalised and the different

measures used in each case (Cohen & Wills, 1985; Flannery, 1990; Lam & Grossman, 1997; Sarason et al., 1990; Vaux, 1991). Esprey (1996) seconds this contention in explanation for the counterintuitive findings of her South African study.

The present study sought to explore three facets of social support, namely the appraisal of being cared for and esteemed, the perception of available supportive behaviours from friends and family, and the individual's orientation towards utilising available support. By investigating these particular conceptualisations of the meta-construct 'social support', the present study endeavoured to explore certain pressing questions in the social support literature. Much of the research into the phenomenon of social support, and the role it plays in the stress-strain relationship specifically, has employed measures of received or available support (Barrera, Sandler, & Ramsay, 1981; Boscarino, 1995). Authors such as Sarason, Shearin, Pierce and Sarason (1987) and Andrews, Brewin and Rose (2003) argue that these measures fail to reflect the individual's subjective appraisal of being supported. Examination of the receipt of support to the neglect of an individual's appraisal of being supported begs the question of whether the mere presence of support has a beneficial effect within the exposure-PTS relationship. What of those individuals that do not access or utilise available support, but may nevertheless feel that they are supported? What of those individuals that do access and utilise available support, but perhaps feel that they are not supported enough? It remains unclear as to whether it is the availability and receipt of support or the appraisal of being supported that impacts on the exposure-PTS relationship.

Vaux, Burda and Stewart (1986) extend this question even further. They argue that the linear distinction between received and perceived support does not reflect the complexities of the meta-construct, and criticises the body of social support research for failing to acknowledge the multitude of factors that fall under the umbrella concept. Vaux, Burda et al. (1986, p.159) propose that "support resources of whatever quality are useless if the individual, for one reason or another, is reluctant to utilise them". As a consequence of this contention, Vaux, Burda et al. (1986) offer an additional facet to the social support research in the form of the Network Orientation Scale (Vaux, Burda et al., 1986). By employing Vaux's three measures of social support, the present study undertook to investigate not only

the relative importance of available support and the appraisal of being supported, but to explore whether an individual's belief in the value of utilising available support plays a significant role in the exposure-PTS relationship. Does inclusion of this facet account for the individual who has support available to him/her, but chooses to suffer in silence? To what degree, if any, does this orientation impact within the exposure-PTS relationship?

The purpose of the research was to examine what types of traumata ECPs are exposed to, and the relative impact these traumatic experiences have on them. The study further aimed at exploring the role of social support in the relationship between exposure to traumatic events and the development of PTS symptoms. The research sought to test the hypothesis that social support acts as a buffer within that relationship. By endeavouring to answer the questions posed above, the present study aimed at exploring the facets of the broad concept of social support that might impact within the exposure-PTS relationship. It aimed at examining the relationship between each conceptualisation of social support employed and the role each plays in the exposure-PTS relationship. In this way it sought to provide both a theoretical contribution and a methodological clarification.

The study sought to contribute to our understanding of the traumatic nature of paramedical work in South Africa, and to elucidate the relative importance of social support in the development of PTS symptoms in the ECP population. Apart from pointing to certain trends, and providing implications for future research in the area, the research aimed at further sensitising people to the traumatic exposure South African ECPs are forced to confront. This investigation, it is hoped, may contribute to the social support and traumatology literature and help to refine future supportive interventions with ECPs and allied emergency services personnel.

This introduction has served to provide an overview of the purpose and course of the research and a brief context to the questions posed in this study. The structure of this research report is now briefly outlined. The following chapter provides a review of the relevant traumatology literature. It aims at positioning the present research within a theoretical framework, reviewing the empirical research in the field from within this

framework and exploring certain related concepts as they pertain to the present study. These concepts include continuous or complex PTSD, secondary traumatic stress and partial PTSD. Chapter 3 presents a discussion of the social support literature, with particular emphasis on the multiple facets subsumed under the umbrella term, and the current research in the field. Certain pivotal debates in the social support literature will be explored as they pertain to the present study. These debates include a discussion of the definitional ambiguity of the term 'social support', elucidation of the social support buffer/ main effect debate, discussion of social support as a moderator, mediator or buffer, and discussion of whether to consider social support an individual or environmental variable. Chapter 4 provides a discussion of emergency work and the nature of the work of an ECP, with particular reference to the South African context. It serves to provide an in-depth review of the empirical research in the area and to position this discussion within a theoretical model of trauma in critical occupations. Chapter 5 presents the method employed and Chapter 6 the results of the present study. Chapter 7 presents the discussion of the results. Chapter 8 offers an examination of the limitations of the study and presents recommendations, both for future research and for proposed interventions.

CHAPTER 2: POSTTRAUMATIC STRESS DISORDER AND RELATED CONCEPTS

2.1 Introduction

The phenomenon of posttraumatic stress disorder (PTSD) has been the subject of a wealth of literature and research since its inception twenty years ago. This chapter aims at defining PTSD and distinguishing it from related concepts. The following discussion seeks to contextualise the present study within a theoretical framework and the body of empirical research in the field of traumatology. Various theoretical frameworks have been proposed to account for the phenomenon of PTSD. These will be outlined and the psychosocial framework in which the present study is to be positioned will be elucidated. This chapter also seeks to present an overview of the empirical research in the field and aims to do so within this psychosocial framework. Related concepts such as continuous or complex PTSD, secondary traumatic stress and partial PTSD will also be discussed.

2.2 Defining Posttraumatic Stress Disorder (PTSD)

The term posttraumatic stress (PTS) may be a relatively new one, but it is by no means a new concept. The psychological impact of exposure to traumatic events was acknowledged long before the third edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association [APA], 1980) and the birth of the term PTSD. The notion that an individual may develop certain symptoms following exposure to some sort of traumatic incident is indeed an old one; one which, as Trimble (1985) points out, can be traced back to Shakespearean tragedies such as King Henry IV, wherein characters complain of intrusive dreams of bloody combat. The notion that emotional disturbance may result following a traumatic incident came to be explored by certain pivotal figures in the history of modern psychology, such as Charcot, Janet and Freud, and has continued to be an area of much interest to mental health professionals and researchers (Trimble, 1985).

It is apparent that what was previously termed ‘shell shock’ during the first and second world wars, and what came to be known as ‘combat fatigue’ following the Korean and Vietnam wars, is in fact now subsumed under the diagnostic category of PTSD. The great first world war poet, Wilfred Owen, gives a chilling description of what we now recognise as a classic symptom of PTSD, in the following lines of his poem "Dulce Et Decorum Est":

> Dim, through the misty panes and thick green light,
> As under a green sea, I saw him drowning.
> In all my dreams, before my helpless sight,
> He plunges at me, guttering, choking, drowning.
>
> Wilfred Owen (1918, p.188)

According to Kaplan, Sadock and Grebb (1994), the most central symptom of PTSD is the persistent re-experiencing of the traumatic event in the form of excessive rumination and/or recurring dreams. What Wilfred Owen describes in his poem is the experience of this classic symptom of intrusion. The symptoms of PTSD outlined in the text revision of the fourth and most recent Diagnostic and Statistical Manual of Mental Disorders (APA, 2000) are grouped into three clusters. The first being the intrusion cluster which is characterised by the persistent reliving of the traumatic event as though it were being continually re-enacted in the present. It is described by Green, Wilson and Lindy (1985, p.55) as denoting the re-experiencing of "elements of the trauma in dreams, and uncontrollable and emotionally distressingly intrusive images".

The second symptom cluster described and classified in the DSM-IV-TR is that of avoidance. A traumatised individual manifesting symptoms of avoidance persistently avoids stimuli associated with the trauma, and displays a degree of emotional numbing. Horowitz (1976) proposes that symptoms of avoidance represent a defense response to the painful experience of intrusive symptoms.

The third symptom cluster of increased arousal is a recently acknowledged addition to the DSM diagnostic category. The DSM-III category made no mention of this cluster of

symptoms, which is undoubtedly as important a component of PTSD, and as psychologically crippling, as the intrusion and avoidance symptoms. This oversight was acknowledged, however, with the advent of the DSM-III-R. The DSM-IV-TR defines symptoms of increased arousal as encompassing an exaggerated startle response, a difficulty falling or staying asleep, hypervigilance, a difficulty concentrating, and irritability or angry outbursts (APA, 2000). These three symptom clusters, in addition to specifications regarding the presence of a traumatic trigger, and the duration and severity of the disturbance, constitute the diagnostic criteria for PTSD.

2.3 Posttraumatic Stress and Stress

Posttraumatic stress as a concept falls under the broad heading of 'stress'. It is necessary to make certain fundamental distinctions between PTS and the more general term for the sake of theoretical and methodological clarity. The term 'stress', according to Everstine and Everstine (1993), has been diluted by colloquial usage to denote a range of emotions from angst to fatigue. They argue for a tighter definition. Lazarus and Folkman (1984, p.354) define stress as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being". It is clear from this definition that the stress stimulus is far broader than that described in Criterion A of the diagnostic criteria for PTSD (APA, 2000). The events qualifying as precipitants for PTSD, according to the DSM-IV-TR, "involve actual or threatened death or serious injury, or a threat to the physical integrity of himself/herself or others" (APA, 2000, p.467). A key distinction between PTS and stress is the shocking severity of the stimulus that threatens to overwhelm the individual's perceived resources.

In spite of this theoretical distinction, it is often difficult in practice to differentiate stress and PTS. Lazarus (1999 in Davidson, 2001) contends that the distinction between stress and PTS is a difference of degree rather than kind. He argues that there is considerable overlap between the two states. Davidson, Fleming and Baum (1986) argue that symptoms of chronic stress are related to, and often resemble, symptoms of PTSD. They propose that shared symptoms include moderate levels of depression and anxiety, sleep disturbances,

increased arousal, withdrawal and decreased social interaction (Davidson et al., 1986). What these authors suggest is that PTS may, by virtue of either severity or chronicity, represent an extreme on the stress continuum (Davidson et al., 1986; Lazarus, 1999 in Davidson, 2001).

A form of stress that may be particularly difficult to conceptually distinguish from PTS in occupations where potentially traumatic exposure is work-related, is occupational stress (McCammon, 1996; Paton & Smith, 1996). Among emergency services where the work itself may be traumatic, PTS and occupational stress may overlap. Those stressors generally accepted as occupational stressors include pay, work conditions, interactions with colleagues and supervisors, and volume of work (Green, 1999). Occupational stress may, however, overlap with traumatic stress when work conditions are such that equipment fails and a patient dies for example. Paton and Smith (1996) propose that distinguishing between these two types of stress is further confounded in these professions by attributional bias. They argue that emergency services personnel are more inclined to complain of occupational stressors than they are to admit to traumatic reactions (Paton & Smith, 1996).

It is clear that although the concepts of PTS and stress are theoretically distinct from one another, in certain populations, emergency services personnel presenting a noteworthy example, they may overlap and be difficult in practice to distinguish.

2.4 Epidemiology of PTSD

Epidemiology and etiology are inextricably intertwined in the understanding of trauma. The question of who develops PTSD is intimately related to the question of what causes it. Green (1994) reports that recent studies have shown that up to three-quarters of the general population of the United States have been exposed to an event that would meet the DSM-IV-TR stressor criterion. She reports that epidemiological studies show that only one quarter of those individuals exposed to an event meeting the description offered in DSM-IV-TR criterion A actually go on to develop PTSD (Green, 1994). The category of PTSD is one of only a few diagnoses in the DSM-IV-TR that specifies its own etiology and incorporates it within the diagnostic criteria. It is clear, however, given the small proportion of people that

go on to develop PTSD following traumatic exposure, that exposure to a traumatic event, although necessary, is certainly not a sufficient condition for the development of PTSD. The investigation of epidemiology thus invites an understanding of etiology.

2.5 Theoretical Models of PTSD

From the earliest dawning of a consciousness of trauma, vehement debates have raged regarding its etiology (Trimble, 1985; van der Kolk, Weisaeth & van der Hart, 1996). From the early theories proposing physiological origins to the work of Charcot, Janet and Freud in the early 19th century, to more recent formulations, the issue of etiology has always been a matter of contention (Trimble, 1985; van der Kolk et al., 1996). Given that only a portion of those individuals exposed to a traumatic event actually go on to develop PTSD, the question of what causes it has been of particular interest. Various theories have evolved in the past 30 years to answer this question, each with its own merits. A brief overview of 4 of the current theories of PTSD will be provided in the following section. The models presented have been chosen to illustrate an evolution of thought from focus on individual variables, to focus on individual-event interaction, to focus on the interaction between the individual, the event, and the recovery environment. The psychosocial model proposed by Green, Wilson and Lindy (1985) will be explored in depth as it serves as the theoretical framework for the present study.

2.5.1 The Psychodynamic Model

The psychodynamic theories originating with Freud have underpinned many of our more recent conceptualisations of PTSD, and particularly of combat exposure (Peterson, Schwartz & Prout, 1991). In accordance with psychodynamic principles, which seek to account for intrapsychic phenomena, the psychodynamic theories of trauma place particular emphasis on pre-trauma conflicts, individual defense styles and the constitution of the individual.

The psychodynamic theories draw on Freud's (1920) contention that traumatic material, being essentially incomprehensible, is such that it defies symbolic representation in the

psyche. He held that this partially-represented material is accompanied by anxiety which triggers the activation of defense mechanisms such as suppression and avoidance (Freud, 1920). Freud contended that although the defensive avoidance of this material aims at keeping it from full conscious awareness, the material may emerge into consciousness in the form of intrusive symptoms. The work of Freud (1920) constitutes the bedrock of current psychodynamic theories. Garland (1998), a current psychodynamic trauma theorist, understands extreme trauma as a rupture, which involves an evacuation of symbolic thought. She contends that the symptoms of PTSD are so difficult to resolve precisely because "the very intensity of the struggle to deal with the flood of unmanageable material (occurs) *in the absence of the apparatus for thinking itself*" (Garland, 1998, p.18). The resolution of PTSD, in psychodynamic terms, thus involves the gradual re-establishment of the symbolic function and the creation of a symbolic representation of the trauma within the psyche (Garland, 1998).

The psychodynamic theories provide a comprehensive account of the intrapsychic mechanisms involved in PTSD. They have been criticised, however, for emphasising individual variables without concern for the individual's interaction with his/her environment, and to the neglect of the social context (Peterson et al., 1991).

2.5.2 Horowitz's Information –Processing Model

Horowitz's (1976) Information-Processing model forms the cornerstone of the DSM diagnostic criteria for PTSD and is the model upon which many of the more recent theories of PTSD are founded (Peterson et al., 1991). It has been described by Peterson et al. (1991, p. 69) as "the most influential model" of PTSD. The model employs, as its fundamental premise, the notion that individuals hold mental models of the world known as schemata, which enable them to process incoming information. Horowitz (1976) contends that traumatic exposure presents an individual with information that falls beyond the scope of these schemata, and that this results in a state of distress. This distress leads the individual to revise these existing schemata to accommodate the new information. Horowitz (1976) proposes that the symptoms of avoidance and intrusion represent two extremes of a

regulatory mechanism, which controls the amount of information allowed in during this process of revision. In other words, symptoms of avoidance are evidence of a blocking out of information and symptoms of intrusion are evidence of an influx of information. Horowitz (1976) contends that individual's oscillate between these two extremes following traumatic exposure.

Horowitz's (1976) model reframes the symptoms of avoidance and intrusion, from evidence of pathological mental chaos, to evidence of a 'normal' process of accommodating the traumatic event within the mental apparatus. More recent models, based on Horowitz's (1976) have shifted focus as a consequence, to viewing symptoms of intrusion and avoidance not as symptom states per se, but as factors that may mediate the effects of traumatic exposure (Everstine & Everstine, 1993; Joseph, Yule & Williams, 1995; Paton & Stephens, 1996). This shift has led to debates in the literature regarding whether denial and avoidance are indeed evidence of pathology or rather, viewed in the context in which they manifest, adaptive coping mechanisms.

Horowitz (1999) further proposed that following traumatic exposure, an individual moves through different phases of recovery. The first of these stages, according to Horowitz (1999) is characterised by feelings of disbelief and bewilderment. Thereafter, he proposed, an individual enters a stage of denial characterised by symptoms of avoidance (Horowitz, 1999). The following stage is the stage of oscillation in which the individual moves back and forth between avoidance and intrusion (Horowitz, 1999). The "working through" stage is characterised by "less intrusive thoughts and less uncontrolled attacks of emotion with greater recognition, conceptualisation, stability of mood, and acceptance of the meanings of the event" (Horowitz, 1999, p.330). Finally, according to Horowitz (1999), the individual should ideally reach the integration phase in which the traumatic event has been processed and existing schemata have been modified to accommodate it.

2.5.3 Janoff-Bulman's Cognitive Appraisal Model

Janoff-Bulman (1985) contends that individuals hold cherished assumptions about the self and the world, and that traumatic exposure shatters these assumptions. She has identified three basic assumptions and these are:

1) The belief in personal invulnerability.
2) The perception of the world as meaningful and comprehensible.
3) The view of the self in a positive light.

The appraisal model draws from Lazarus and Folkman's (1984) interactional definition of stress, and is based on the premises of Horowitz's (1976) Information-Processing model. It emphasises individual appraisal of an event as traumatic and holds that this appraisal takes place within a context of basic assumptions. These basic assumptions are said to be shattered when an event is appraised as traumatic in nature, and much like Horowitz's (1976) description of the process of revising schemata, the new information is said to necessitate accommodation through a revision of the individual's theory of reality.

Peterson et al. (1991, p.81) argue that there is substantial empirical support for Janoff-Bulman's model and state that it is "complementary with other views of PTSD". The theory expands on more traditional theories focusing specifically on individual variables, by proposing that the environment and the individual interact to produce an outcome. It fails, however, to account for the recovery context, and those variables that facilitate or hinder the revision of the three basic assumptions following traumatic exposure.

2.5.4 Green, Wilson and Lindy's Psychosocial Model

Lazarus and Folkman's (1984) definition of stress provides a contextual understanding of the concept as a dynamic interaction between an individual and his/her environment, which involves a subjective appraisal. Integral to the experience of stress according to this definition is the individual's subjective experience of the stimuli. This appraisal-based

understanding of stress has been appropriated by various authors (e.g. Janoff-Bulman, 1985; Peterson et al., 1991) and applied to PTSD. Green et al. (1985) draw on this understanding of PTSD and provide one of the most comprehensive models of trauma by combining the elements of the cornerstone theories in the area and emphasising something new: namely the recovery environment. Green et al. (1985) propose a psychosocial understanding of trauma to account for the multitude of factors that may impact on the exposure-PTS relationship and account for why some individuals develop PTSD, and why others, perhaps exposed to the same stimuli, do not.

Green et al. (1985) propose that to answer the question of why one individual develops PTSD and another does not, theory must take into account not only the nature of the precipitating event, but also the characteristics of the individual and the environment in which the individual attempts to recover. They argue that appraisal of a traumatic event takes place within both an individual and a social context, and that it is this social context that has been neglected in theories such as Horowitz's (1976) and Janoff-Bulman's (1985). Answering directly to Horowitz's (1976) theory, they propose that the 'working through' of a traumatic event depends not only on individual characteristics which govern perceptions and appraisals, but also on the social environment in which the 'working through' takes place. Refer to Figure 1.

2.5.4.1 The Event

Green (1993) expanded on the DSM-III-R definition of what constitutes a traumatic stressor, by delineating categories of experiences that may be considered traumatic precipitants. She refers to these as dimensions of trauma (Green, 1993). What delineating these dimensions serves to do is to categorise events in a manner that allows for appreciation of shared characteristics, and facilitates comparison between studies in an effort to understand which sorts of events are likely to place individuals at most risk of developing PTSD. Green (1993) has identified 8 dimensions of trauma:

Threat to Life and Limb

Green (1993) describes this dimension as an encounter with the environment in which an individual believes their life is in danger. She states that this dimension has received the most attention in the trauma research (Green, 1993).

Severe Physical Harm or Injury

Green (1993) argues that this dimension is rarely examined, but that it may have a profound impact. It involves actually being injured or harmed in some way.

Receipt of Intentional Injury/Harm

This dimension, Green (1993) proposes, is distinguished from the second dimension by the deliberate intent that precedes the harm or injury. Authors such as Janoff-Bulman (1985) propose that events that are a product of human malevolence rather than accident or natural disaster, shatter more basic assumptions and result in more problematic outcome.

Exposure to the Grotesque

This dimension accounts for experiences where an individual is exposed to the death or near death of another, which is particularly disfiguring, gruesome or grotesque (Green, 1993).

Violent/Sudden Loss of a Loved One

Green (1993) proposes that the violent or traumatic loss of a loved one, even if not witnessed directly, may result in a posttraumatic reaction.

Witnessing or Learning of Violence to a Loved One

This dimension refers to the vicarious traumatisation experienced by loved ones following a violent incident. Green (1993) proposes that this dimension is under-recognised in the literature, but that studies that have been conducted suggest that it may result in symptoms of PTSD.

Learning of Exposure to a Noxious Agent

This dimension has only recently been acknowledged in the trauma literature (Green, 1993). It refers to the belief that exposure to a chemical or disease may lead to death, whether this belief is founded or unfounded. This dimension includes exposure to HIV/Aids or toxic waste for example.

Causing Death or Severe Harm to Another

Green (1993) describes this dimension as involving the perpetration of an act of murder or injury. She states that this may result in symptoms of PTSD in a military or police setting for example, where an individual is instructed to follow orders. These symptoms may be particularly pronounced when the victim is perceived to have been innocent or helpless (Green, 1993).

Extensive research has aimed at isolating those particular events that place individuals at risk for developing PTSD. Such studies have examined the sequelae following different types of traumatic exposure. These include studies into the effects of combat-exposure (e.g. Boscarino, 1995; Card, 1987; Frueh et al., 1994; Keane, Scott, Chavoya, Lamparski & Fairbank, 1985; Motta, 1993), rape (Kilpatrick et al., 1985), sexual abuse (Donaldson & Gardner, 1985), kidnapping (Navia & Ossa, 2003), civil unrest (Esprey, 1996), the holocaust (Danieli, 1985), shooting incidents (Creamer et al., 1993), disasters (Brooks & McKinlay, 1992), motor vehicle accidents (Dougall et al., 2001) and terminal illness (Kazak et al., 1997). Studies such as Esprey's (1996) and Beaton, Murphy, Johnson, Pike and Corneil (1998) have sought to isolate those particular events or dimensions of trauma that place individuals at the most risk of developing PTSD. Research has also examined the effects of differing stressor severity and chronicity (Kopel & Friedman, 1997; Newman, Riggs & Roth, 1997; Zlotnick, Zakriski, Shea, Costello, Begin, Pearlstein & Simpson, 1996).

2.5.4.2 The Individual's Experience of the Event

Related to the dimensions of trauma described above, is the individual's particular experience of and role in the event. Green et al. (1985) argue that different individuals

exposed to the same incident may react quite differently as a consequence of the different roles they perform and perspectives they hold within it. They propose that the person who feels more responsible for the event is likely to exhibit more symptoms of PTSD than the individual who does not (Green et al., 1985). They also emphasise the role the individual plays in the situation and distinguish between playing a passive or an active role. Essentially what they propose is that the individual driving the car that was involved in a collision may have a different experience to the passengers and the ECPs that arrive on scene for example. The driver may feel responsible for having crashed, another passenger may have wished he had resuscitated the injured before the ECPs arrived, and the ECPs who do not know the injured may feel very little. Different individuals at the scene of the same potentially traumatic incident will have different experiences of the event. These experiences are likely to place individuals at different levels of risk for developing PTSD. In the above example for instance, the driver may be the most likely to develop PTSD given his belief that he was responsible.

Research into the variables suggestive of an individual's experience of the event has examined variables such as degree of life threat (Ullman & Filipas, 2001; Wilson & Raphael, 1993), the individual's role in the event (Wilson & Raphael, 1993) and sense of responsibility (Folkman, Lazarus, Dunkel-Schetter, Delongis & Gruen, 1986, Stromnes, 1999).

2.5.4.3 Individual Characteristics

The relative impact of event variables and individual variables is a matter of some debate (Green et al., 1985). Many authors have adopted Lazarus and Folkman's (1984) interactional approach, however, and assume that the outcome of a traumatic event is determined by both the event and the individual's characteristics (e.g. Janoff-Bulman, 1985; Peterson et al., 1991). Green et al. (1985) draw directly on Lazarus and Folkman's (1984) theory of stress and coping for their theory of PTSD. They propose, in accordance with Lazarus and Folkman's (1984) theory, that a person's appraisal of an event mediates it's impact, and that this appraisal is often influenced by prior experiences (Green et al., 1986).

Also included in this category are individuals' defensive styles following exposure. Green et al. (1985) propose that prior psychiatric difficulties or prior exposure may render an individual more vulnerable. An individual's coping strategies, they emphasise, are of particular interest as these have been shown in the research to impact on the exposure-PTS relationship (Green et al., 1985).

The individual characteristics that have been examined in the trauma research include resiliency (Lam & Grossman, 1997), neuroticism (Hyer et al., 1994; Lam & Grossman, 1997; McFarlane, 1989; Ormel & Wohlfarth, 1991), pre-trauma difficulties (Dreeban, 1992; Gibbs, 1989; McFarlane, 1989), sense of coherence (Antonovsky, 1993; Kassen, 2002), attributional style (Joseph, Yule & Williams, 1994), locus of control (Lam & Grossman, 1997; Robinson et al., 1997), hardiness (Moran & Britton, 1994), wisdom (Linley, 2003) and individual expectations (Paton, 1994). Trauma research has also focused on the role of various defense mechanisms and coping styles such as rationalisation (Davies, 2001; Palmer, 1983), externalisation (Blake et al., 1992), dissociation (Weiss et al., 1995), denial (Kopel & Friedman, 1997), reaction formation (Birmes, Warner, Callahan, Sztulman, Charlet & Schmitt, 2000), regression (Grevin, 1988), the use of humour (Davies, 2001; Palmer, 1983) and wishful thinking (Dougall et al., 2001; Stromnes, 1999). Research has begun to show that, as Bowman (1999, p.27) contends, "preevent individual differences in emotionality, beliefs, actions, disorders, and intelligence account for far more of postevent distress syndromes than do event characteristics".

2.5.4.4 The Recovery Environment

Green et al.'s (1985) addition to existing theories of trauma, and an area that has received relatively little attention, is the recovery context. Ullman and Filipas (2001) criticise existing research into PTSD for neglecting this important focus. Subsumed within the recovery environment are social supports, community cohesion, societal attitudes, cultural characteristics and demographic profiles. Green et al. (1985) propose that social support is the variable that has received the most attention in the literature, and that it has been shown to be associated with better psychological adjustment. Interestingly they describe social

support as being both an individual characteristic and a social phenomenon. They propose that an individual's willingness to access support is an individual variable, but the provision of that support is more a function of the recovery context (Green et al., 1985). Follow-up research conducted by Wilson and Kraus (1985, in Peterson et al., 1991) found that the best predictors of PTSD in their sample of Vietnam veterans were the severity of the traumatic stressor and the degree of psychosocial isolation in the recovery context. In a recent meta-analysis, Brewin, Andrews and Valentine (2000) reported that across the 77 studies reviewed, factors in the recovery environment post-trauma were more predictive of PTSD than individual variables in operation before the trauma.

Community and societal variables that may impact on the exposure-PTS relationship have received a lot of attention in research examining the effects of combat-exposure following Vietnam (Green et al., 1985). Attitudes towards the individual following exposure may impact significantly on the individual's recovery. The return of Vietnam veterans to a critical society and the derision of public opinion (Keane et al., 1985), a rape victim being blamed for having invited the attack (Ullman & Filipas, 2001), and a lack of respect or recognition afforded emergency services personnel (Sparrius, 1992) may impede recovery.

Demographic variables such as age, social class, level of education for example, together with cultural variables, according to Green et al. (1985), may influence an individual's appraisal and working through of an event. They propose that these variables indicate inclusion in particular groups, and the identification with these groups may impact on recovery. There has been extensive research into the role of demographic variables such as gender (Pole, Best, Weiss, Metzler, Liberman, Fagan & Marmar, 2001; Wolfe & Kimerling, 1997), age (Gibbs, 1989), ethnicity (Pole et al., 2001), level of education (Ullman & Filipas, 2001), and social class (Gibbs, 1989). Wilson and Raphael (1993) have explored the role of the social climate and resources available in the community within the exposure-PTS relationship. The role of social support in the exposure-PTS relationship has been widely researched. This research will be reviewed in the following chapter.

Green et al.'s (1985) psychosocial model of trauma has been widely employed in the traumatology literature as a framework for understanding the variables that impact on the exposure-PTS relationship. It has been appropriated by McCammon (1996) in her construction of a framework for understanding traumatic stress in emergency services personnel. It has also been employed in South African studies such as Esprey's (1996) and Ortlepp and Friedman's (2002) and South African studies specifically examining trauma among emergency services personnel such as Kassen's (2002).

It is clear from the preceding overview that various models of PTSD exist, and that each cherishes its own fundamental premises. The overview offered does not purport to account for every model that has been proposed as this is beyond the scope of this discussion. Peterson et al. (1991) offer a comprehensive review of these models. The models presented here have been chosen to present an evolution of thought from focus on individual variables, to focus on individual-event interaction, to focus on the interaction between the individual, the event, and the recovery environment. Subsequent models have been proposed, such as Schultz's (1984, in Peterson et al., 1991) cybernetic theory and Peterson et al.'s (1991) ecosystemic model, which purport to evolve thought in the area of PTSD even further. These models dilute the psychosocial model's emphasis on the social aspects of the recovery environment, however, and arguably lack its parsimony.

The focus of the present study is on how social support, an integral element of the recovery environment, impacts on the exposure-PTS relationship. The emphasis of the psychosocial model on this variable and its particular sensitivity to how the broad concept of social support may be perceived as both an individual and a social variable, render this the most appropriate theoretical framework for the present study.

2.6 Continuous and Complex PTSD

Studies focusing on the sequalae of discrete traumatic stressors are not easily extrapolated for use in the South African context where exposure is repetitive and ongoing, and where the effects of this exposure are cumulative, resulting in what Straker and the Sanctuaries

Counselling Team (1987) have referred to as ‘continuous traumatic stress’. Certain authors have proposed that the PTSD diagnostic category does not sufficiently account for the effects of, and the resultant symptomatology that arises from, exposure to repetitive, ongoing traumatic stressors (Green, 1993; Herman, 1992; Roth, Newman, Pelcovitz, van der Kolk & Mandel, 1997; Zlotnick et al., 1996).

Straker et al. (1987, p.48) were the first to observe the inadequacy of the existing PTSD category for use in the South African context, through their work in the South African townships, and state that "(t)he term post traumatic stress syndrome is a misnomer in the South African context. Individuals living in South Africa ..... are subjected to continuous traumatic stress". Herman (1992) argues that repetitive exposure may result in a more severe form of pathological traumatic adaptation than that observed in PTSD, and proposes that an addition be made to the nomenclature in the form of a category of ‘complex PTSD’. Green (1993, p.141) has supported this contention by arguing that “prolonged or multiple trauma would result in more complicated and/or more severe responses than acute events”.

Herman (1992) and Green’s (1993) contention is empirically supported by research by Newman et al. (1997). Research has demonstrated that individuals manifesting complex PTSD, as defined by Herman (1992), exhibit significantly higher scores on Horowitz, Wilner and Alvarez's (1979) Impact of Event Scale, a measure of PTSD symptomatology, than individuals with PTSD (Newman et al., 1997). This suggests that complex PTSD is a syndrome of more severe symptoms than PTSD. The syndrome of symptoms described by Herman (1992) has been included in the DSM-IV and DSM-IV-TR under associated features of PTSD (APA, 1994; 2000). The majority of research into the validity of the diagnosis, including that by Zlotnick et al. (1996) and Roth et al. (1997), has focused almost exclusively on the sequalae of sexual abuse. This particular form of long-term, repetitive exposure was at the heart of Herman’s (1992) conceptualisation and it is thus not surprising that research has continued with this focus. It is as yet unknown, however, whether this same syndrome of symptoms may account for other forms of repetitive exposure, such as that encountered by emergency services personnel, and to what extent the concept of ‘complex PTSD’ overlaps with the concept of ‘continuous traumatic stress’.

At present the terms ‘complex PTSD’ and ‘continuous traumatic stress’ have not been adequately described or distinguished from one another. What has been empirically discerned is that exposure to repetitive, ongoing stressors appears to produce a syndrome of more severe symptoms than that following exposure to a discrete stressor. This highlights the relative inadequacy of studies into the psychological sequelae of discrete stressors for extrapolation to the South African context, and specifically the work of ECPs within this context, where exposure is repetitive and continuous.

The explication of continuous exposure to traumatic stressors raises an important conceptual challenge to the PTSD frameworks proposed, and the psychosocial model in particular. The models of PTSD available have been developed for the most part from research into the sequelae of discrete stressors. Their empirical origins are evident in the terminology used, which serves to classify ‘pre’ and ‘post’ events. What this classification tacitly assumes is that the event occupies a discrete time period and evidences a clear starting and ending point. Those individuals exposed continuously may not fit quite as neatly into the given frameworks. This argument raises a particular concern for the present study, which focuses on social support as an element of what Green (1985) terms the ‘recovery environment’. The term assumes an end point or at the very least a respite in exposure, for recovery to take effect. For individuals, such as emergency services personnel, who are arguably exposed continuously, the question is raised as to whether the ‘post’ event variables of the recovery environment impact in the same manner as that reported in studies of discrete stressors.

2.7 Secondary Traumatic Stress and Burnout

Figley (1995, p.xiv) defines secondary traumatic stress disorder (STSD), or ‘compassion fatigue’ as it is also known, as "the natural behaviors and emotions that arise from knowing about a traumatising event experienced by a significant other - the stress resulting from helping or wanting to help a traumatised person". According to Figley (1995), those in the helping professions are at risk of developing STSD through their contact with people who have been traumatised. Members of critical occupations for example are often required, in the course of their duties, to deal with victims of child abuse, wife battery, rape and

violence, and in so doing place themselves at risk of developing symptoms of STSD. Figley (1995) proposes that STSD is a syndrome of symptoms virtually identical to PTSD, but for the fact that a person suffering from STSD need not have experienced a traumatic event themselves. They need only to have been exposed to the event through a significant other whom they wish to help. The DSM-IV-TR description of what constitutes exposure to trauma clearly denotes the mere knowledge of another's traumatic experience as traumatising, and it thus tacitly subsumes the phenomenon of STSD.

Salston and Figley (2003, p.169) argue that the concept of 'burnout' is "similar" to STSD, but "far too vague". Maslach (1982, p.3) defines 'burnout' as "a syndrome of emotional exhaustion, depersonalisation, and reduced personal accomplishment that can occur among individuals who do 'people work' of some kind. It is a response to the chronic emotional strain of dealing extensively with other human beings, particularly when they are troubled or having problems". The term 'burnout' clearly shares much with the concept of STSD, although the vicarious exposure to others' suffering it refers to does not specifically denote traumatic exposure. What this conceptual overlap suggests is that the plethora of research into the phenomenon of burnout may reflect, in part, the phenomenon of STSD. This suggests that the burnout literature may be a worthy source of empirical support for the concept of STSD. Paton and Smith (1996) propose that because it is so difficult to distinguish organisational and traumatic stressors in the emergency services, it may be of particular use to understand the phenomenon of 'burnout'.

This phenomenon of vicarious traumatisation is supported by PTSD research such as that conducted by Creamer et al. (1993) into the incidence of PTSD in a sample of workers employed in an office building in which a shooting incident occurred. Creamer et al. (1993) found that those people employed in the building exhibited higher levels of PTS symptomatology than the control group employed, irrespective of whether they had been present at the time of the shooting or not. What this implies is that employees who were not actually witness to the shooting displayed symptoms of PTSD, as a consequence of working with employees who had been witnesses, and as a consequence of hearing about and being aware of the incident. Green (1993) accounts for the phenomenon of vicarious

traumatisation in dimension 6 of her theory. She acknowledges that learning of the violent or sudden death of a loved one is profoundly traumatic even in the absence of direct exposure to the incident (Green, 1993).

2.8 Partial PTSD

The concept of partial PTSD has been proposed by authors such as Carlier and Gersons (1995), Schutzwohl and Maercker (1999) and Amaya-Jackson, Davidson, Hughes, Schwartz, Reynolds, George and Blazer (1999) as a 'subsyndromal', yet legitimate form of PTSD. Schutzwohl and Maercker (1999) argue that the DSM criteria for PTSD are too strict and that this has both methodological and therapeutic implications. They propose that those individuals that present with atypical symptom profiles do not meet the required criteria on all three symptom clusters (Schutzwohl & Maercker, 1999). This failure to register on the PTSD radar, they argue, leads to erroneous results from empirical research adhering strictly to DSM criteria. In addition, Carlier and Gersons (1995) argue, these individuals do not receive the treatment they require despite their often substantial levels of distress. In their study, Schutzwohl and Maercker (1999, p. 162) found that "the DSM-IV definition of the diagnostic boundary between the presence and absence of PTSD is not optimal in that many individuals without PTSD are exhibiting considerable distress".

Schutzwohl and Maercker (1999) propose that the diagnostic criteria would better reflect those individuals exhibiting significant distress, but perhaps atypically, by diagnosing partial PTSD when the intrusion criteria and either one of the avoidance or hyper-arousal criteria are met.

2.9 Conclusion

The purpose of this chapter has been to formulate a theoretical and empirical trauma framework within which to position the present study. It has aimed at exploring certain pivotal, and frequently contentious, concepts in the field of trauma as they pertain to this study. The purpose of the study was to understand those event variables that place ECPs

at risk, and to observe how social support, an essential element of the recovery environment, impacts on the relationship between exposure and PTSD symptoms. Green's (1985) psychosocial model presents the most appropriate framework in which to position the present research because of its emphasis on the recovery environment and its particular sensitivity to the role of social support as both an individual and environmental variable. The present study aimed at examining the function of social support in both of these roles. An understanding of PTSD among ECPs would be incomplete without an appreciation for the continuous nature of their exposure and their particular risk of secondary traumatisation. The argument for partial PTSD presented demands careful consideration as it pertains to the measurement and report of subclinical PTSD. It suggests that the use of continuous measures of PTSD symptoms, such as that employed in the present study, may be the most appropriate for appreciation of the nuances of symptom presentation. The following chapter presents a discussion of social support.

CHAPTER 3: SOCIAL SUPPORT

3.1 Introduction

This chapter aims at presenting a discussion of social support. A discussion of the relevant social support theory and research will be provided. Particular emphasis will be placed on the role of social support within the exposure-PTS relationship. The discussion further serves to explore the definitional ambiguity that accompanies the concept of social support and aims at engaging with certain pivotal debates in the social support literature.

3.2 Defining Social Support

Defining the term 'social support' is a hazardous exercise. So many definitions of the term exist that it is not clear whether it is the same term being defined. Wallston, Alagna, DeVellis and DeVellis (1983, in Flannery, 1990, p.594) define social support as "the comfort, assistance, and/or information one receives through formal or informal contacts with individuals or groups". Social support is defined by House (1981, in Murphy, 1988, p. 157) as "an interpersonal transaction involving one or more of the following: a) emotional concern (liking, love, empathy); b) instrumental aid (goals and services); c) information (about the environment); and d) appraisal (information relevant to self-evaluation)". A definition often cited (e.g. Kirmeyer & Dougherty, 1988; Pines, 1983; Sarason et al., 1990; Solomon, 1986; Vaux, 1987) is that provided by Cobb (1976). He defines social support as "information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations (Cobb, 1976, p. 300). Definitions of social support are many and varied. The three definitions provided above serve to illustrate certain of the nuances that distinguish these definitions and cloud our understanding of the overall concept.

According to Wallston et al.'s (1983, in Flannery, 1990) definition, social support arises out of a tangible exchange, which takes place via actual contact with others. House's (1981, in Murphy, 1988) definition also assumes that a 'transaction' takes place and implies actual

contact. Cobb (1976) defines social support as a less tangible *sense* of being held in mind by others that may or may not arise out of actual contact. The question that arises from this comparison is whether support depends on being received, or whether it may exist in being perceived. A further distinction between the three definitions is the degree to which support is evaluated as such upon objective versus subjective criteria. Cobb's (1976) definition emphasises the importance of the individual's subjective appraisal of being supported as opposed to the more objective receipt of support that distinguishes Wallston et al.'s (1983, in Flannery, 1990) and House's (1981, in Murphy, 1988) definitions. This distinction raises the question of whether social support resides in the eye of the beholder, and if so, what characteristics in the beholder impact upon that perception?

Barrera (1986, p. 414) argues that "definitions of social support are often so vague or so broad that the concept is in danger of losing its distinctiveness", and adds that the term is "insufficiently specific to be used as a research concept". This sentiment is echoed by other authors such as Heller, Swindle and Dusenbury (1986), Schilling (1987), Sarason et al. (1990) and Vaux (1991). Heller et al. (1986) argue that most social support research has been misguided in that it has employed various different definitions of social support under the umbrella term, without separating out the numerous facets that constitute it. They refer to the use of the umbrella term 'social support' as a "dubious endeavour" tantamount to measuring the construct 'personality' without qualifying what traits are under investigation (Heller et al., 1986). Vaux (1991) argues that there has been persistent conceptual and methodological confusion regarding what he refers to as a 'meta-construct'. He proposes that "acknowledging the distinct facets of social support should allow the explication of constructs, the development of focused measures, and the integration of findings" (Vaux, 1987, p.493).

To subscribe to any singular definition of social support is to oversimplify the meta-construct. It is necessary, as authors such as Barrera (1986), Heller et al. (1986) and Vaux (1991) argue, to discern the facets of social support pertinent to the present study and to define each of these sub-constructs. The following discussion serves to explore the various understandings of social support elucidated in the literature, offering both conceptual and

methodological distinctions. The present study serves to measure three of these facets of support. These will be defined and described in the following discussion.

3.3 Social Support and Stress

The idea that certain environmental variables such as social support may be involved in the etiology of certain physical and psychological disorders emerged in the mid-1970's (Heller et al., 1986). The notion that social support might protect individuals from the effects of negative life events became a popular area of study (Allen & Ortlepp, 1998; Andrews et al., 2003; Boscarino, 1995; Bowman, 1999; Cohen & Wills, 1985; Esprey, 1996; Flannery, 1990; Heller at al, 1986; Lam & Grossman, 1997; Navia & Ossa, 2003; Sarason et al., 1990; Stromnes, 1999; Terry et al., 1993; Ullman & Filipas, 2001). Schilling (1987) argues that the enthusiasm for the hypothesised protective function of social support has led to an uncritical adoption of social support strategies in therapeutic and social work settings. He proposes that a more thorough analysis of the effects of social support reveal a far more complicated picture (Schilling, 1987).

There is much evidence in the literature to suggest that individuals who are socially supported are better off than their unsupported counterparts. The majority of research points to the beneficial effects of social support on both physical and psychological well-being (Allen & Ortlepp, 1998; Boscarino, 1995; Cobb, 1976; Cohen & Wills, 1985; Flannery & Weiman, 1989 in Flannery, 1990; Kirmeyer & Dougherty, 1988; McCammon et al., 1988; Pines, 1983; Sandler & Barrera, 1984; Sarason et al., 1983; Terry et al., 1993; Wilcox, 1981). A few studies have emerged which reveal, counterintuitively, that social support is in fact positively correlated with psychological distress (Esprey, 1996; Kaufmann & Beehr, 1986 in Buunk & Hoorens, 1992; Kaufmann & Beehr, 1989). Various explanations have been proposed for these unexpected results.

Cohen and Wills (1985) explain that support may not be perceived as helpful when the type of support offered does not match the individual's own brand of coping. The provision of advice and guidance to an individual in need of emotional support may not be helpful for

example. Schilling (1987) proposes that individuals who consider themselves as self-reliant may be disturbed by efforts to assist them. He adds that well-meaning attempts to assist individuals to cope with specific stressors may undermine defense mechanisms such as denial (Schilling, 1987). Coyne and DeLongis (1986) propose that support may only be beneficial when it is offered in moderation, and that relationships characterised by over-involvement may be counter-productive.

Other explanations for conflicting findings have centred around methodology. Authors such as Cohen and Wills (1985) argue that certain modes of support are best matched with certain types of stressors and that the measures employed to assess the effects of social support should qualify which modes of support are being assessed. They propose that studies evidencing negative effects may be employing measures tapping different modes of support to those evidencing positive effects (Cohen & Wills, 1985). Authors such as Barrera (1986), Vaux (1987), Sarason et al. (1990) and Lam and Grossman (1997) propose that different conceptualisations of the term 'social support' have led to varying operationalisations. They argue that the results of research into the role of social support within the stressor-strain relationship have emerged as contradictory precisely because we are comparing apples and pears across studies (Barrera, 1986; Lam & Grossman, 1997; Sarason et al., 1990; Vaux, 1991).

What arguments such as these serve to suggest is that the role of the various facets of social support in the stressor-strain relationship are as yet still obscure to us. This obscurity is based firstly, on a lack of conceptual specificity and secondly, on a lack of methodological clarity across studies. It is just this obscurity that has led Vaux (1991, p.90) to conclude that "social support process is far more complex than initially thought, as is its relationship to well-being".

3.4 The Main Effect vs the Buffering Effect Debate

Contention in the literature regarding the direction of the impact of social support within the stressor-strain relationship has extended further to debate regarding the exact nature of that

impact. Two alternative schools of thought have evolved around this issue. The first derives a theoretical foundation from attachment theory (Bowlby, 1969 in Flannery, 1990), and much empirical support from studies into the relationship between social support and general psychological and physical well-being (Allen & Ortlepp, 1998; McCammon et al., 1988; Sandler & Barrera, 1984; Terry et al., 1993). This school of thought holds that social support has a direct or main effect on psychological health. In other words, what is proposed is that, irrespective of whether persons are under stress or not, social support has a beneficial effect on well-being (Cohen & Wills, 1985).

The second school of thought, drawing from a large body of empirical evidence (Cobb, 1976; Flannery & Weiman, 1989 in Flannery, 1990; Kirmeyer & Dougherty, 1988; Pines, 1983; Sandler & Barrera, 1984; Wilcox, 1981), advocates that social support is related to well-being only when persons are under stress. According to this view social support constitutes a buffer in the relationship between the stressor and the stress reaction, rather than having a direct bearing on psychological well-being (Cohen & Wills, 1985; Flannery, 1990; Sandler & Barrera, 1984). Considerable support exists for both the 'main' effect and 'buffering' effect hypotheses, together with studies which have found a complete want of evidence for either (Green & Berlin, 1987; Navia & Ossa, 2003; Stromnes, 1999; Weiss et al., 1995).

Evidence for the main effect model is supplied by South African studies such as Allen and Ortlepp's (1998) and Basedau's (1999), which found a significant negative correlation between social support and levels of PTS in a sample of security personnel and police officers respectively. A study by McCammon et al. (1988) evidenced a strong main effect in finding that, in a sample of emergency workers, social support predicted fewer symptoms of PTS. Boscarino's (1995) study into the relationship between social support and PTSD in a sample of Vietnam veterans, produced compelling results in support of the main effect hypothesis. Boscarino (1995) found a significant negative correlation between social support and PTSD, and calculated that those Vietnam veterans reporting low levels of social support had nearly 180% greater risk of PTSD than those subjects reporting high levels of social support.

Weiss et al. (1995), however, found no evidence for the main effect hypothesis. Their study reported a weak, negative correlation between social support and PTSD symptomatology using a revised version of the Impact of Event Scale (IES, Horowitz et al., 1979). One of the most intriguing main effect hypothesis tests is Esprey's (1996). Employing a revised version of the IES (RIES, Esprey, 1996), she found a strong positive correlation between social support and PTSD symptomatology. What she concluded was that symptoms of PTSD were more prevalent among the subjects in her sample reporting high levels of social support (Esprey, 1996).

Similarly contradictory findings have been reported by studies testing the buffering hypothesis. Wilcox (1981) found evidence in support of the buffering effect, by demonstrating that social support was a significant buffer within the relationship between life stressors and psychological adjustment, in a sample of residents of an American community. Kirmeyer and Dougherty (1988) found that supervisor support performed a buffering function between workload and tension. Taft, Stern, King and King (1999) found social support to be a significant buffer in the relationship between exposure and PTSD in a sample of Vietnam veterans. Flannery and Weiman (1989 in Flannery, 1990) provide further support for the buffering hypothesis by reporting positive buffering effects of social support in the face of a variety of stressful life events.

Esprey (1996), however, found no evidence of a buffering effect, revealing instead an unchanged relationship between exposure and PTSD symptomatology when social support had been partialled out of it. Basedau (1999) also failed to find evidence of a buffering effect within a sample of police officers. An unexpected finding by Kaufmann and Beehr (1989), that social support in fact strengthens, rather than buffers, the relationship between occupational stressors and psychological strain, represents yet another inconsistency in the social support research. This same finding was evidenced in an earlier study by the same researchers (Kaufmann & Beehr, 1986 in Buunk & Hoorens, 1992). Kaufmann and Beehr's (1989) results constitute a significant counterpoint to previous findings in the area.

Other studies have served to provide support for both hypotheses, evidencing a simultaneous main and buffering effect. In an examination of the effects of work stress on psychological well-being, Terry et al. (1993) found that support had a significant main effect on well-being, and a significant buffering effect on levels of stress. Sandler and Barrera's (1984, p.37) study into the nature of the social support construct, reported results indicating "a significant direct and stress-buffering effect for support satisfaction in reducing psychological symptomatology". Still other studies have found evidence for neither hypothesis. Stromnes (1999), for example, found no evidence of either a main or a buffering effect in her sample of South African police officers.

The inconsistencies within the main and buffering hypothesis debate have been attributed largely to the variety of different instruments, based on disparate conceptual understandings of the social support construct, which have been employed in the various studies (Barrera, 1986; Sarason et al., 1990; Vaux, 1991). Cohen and Wills (1985) propose that different measures of support are more conducive to evidencing either a main or buffering effect, and that this accounts for the erratic nature of the findings for each.

3.5 Social Support: Moderator, Mediator or Buffer?

A review of the research examining the role of social support in the stressor-strain relationship, particularly that testing the buffering hypothesis, reveals two recurring terms, namely: ‘moderator’ and ‘mediator’. The terms are used interchangeably (e.g. Murphy, 1988) or inconsistently across studies describing the same ‘buffering’ process. Studies such as Cobb’s (1976), Kirmeyer and Dougherty’s (1988), Cook and Bickman’s (1984), Sandler and Barrera’s (1984), Kaufmann and Beehr’s (1989), Esprey’s (1996) and Stromnes’ (1999) use the term ‘moderator’ to describe the buffering role of social support. Other studies define social support as a ‘mediator’ (Andrews et al., 2003; Joseph, Yule, Williams & Andrews, 1993; Lam & Grossman, 1997; McCammon, 1996; Taft et al., 1999; Vaux, 1991; Wilcox, 1981). Baron and Kenny (1986) argue that moderator and mediator variables are distinct from one another and caution against using them interchangeably or arbitrarily.

The term ‘buffer’, as defined by authors such as Cohen and Wills (1985), is a variable that ‘protects’ an individual from the effects of another variable. It is an intervening variable in a relationship between at least two other variables (Cohen & Wills, 1985). The term originates in expressive language and is a less formal description of a type of relationship. The terms ‘moderator’ and ‘mediator’, however, are grounded in statistics where their specific semantic parameters are statistically defined (Baron & Kenny, 1986).

Baron and Kenny (1986, p. 1174) define a moderator as a “variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable”. Statistically, a moderator variable is best represented in an ANOVA equation, where an interaction between the hypothesised moderator variable and the independent variable suggests that that variable does indeed act as a moderator (Baron & Kenny, 1986). Baron and Kenny (1986) further propose certain statistical conditions, which need to be met for moderation to be tested and confirmed, namely:

a) The hypothesised moderator variable should ideally be uncorrelated with both the independent and the dependent variables to provide a clearly interpretable interaction.
b) The relationship between the independent and dependent variable is causal.
c) The hypothesised moderator variable functions as an independent variable.

According to the definition provided by Baron and Kenny (1986), social support may be justifiably considered a moderator variable if a) the relationship between the stressor and the strain could be shown to be causal, and b) if social support could be shown to be both an independent variable and uncorrelated with either the stressor (independent variable) or the strain (dependent variable). The body of social support literature fails to support any of these criteria. The relationship between particular stressors and strains has not been shown to be causal. There is sufficient skepticism regarding the causal nature of the relationship to bring this criterion into question. Certain authors have argued for instance that PTSD symptoms may place an individual at increased risk of subsequent exposure to trauma (Gibbs, 1989). The psychodynamic understanding of the repetition compulsion suggests just this: that traumatised individuals may unconsciously invite re-traumatisation (Freud, 1920).

The main effect hypothesis by definition suggests that social support is correlated with stress and symptoms of PTSD. The main effect hypothesis is widely supported and relatively few studies have found a buffering effect in the absence of a main effect. In fact, Cohen and Wills (1985, p.319) advocate that "a significant relation between the stress and symptomatology measures is necessary to provide a fair test of the buffering hypothesis". The research suggests, in addition, that it would be unwise to treat social support as a consistently independent variable. Some propose that the causal direction of the relationship between social support and stress is inverse to that expected (Barrera, 1986; Keane et al., 1985), or at the very least reciprocal (McDonald, Chamberlain, Long & Flett, 1999; McFarlane, Norman, Streiner & Roy, 1983, in Barrera, 1986), suggesting that social support may act as a dependent, rather than an independent variable. What this argument suggests is that defining social support as a moderator is a dubious exercise. It essentially fulfills none of the criteria stipulated by Baron and Kenny (1986) to justify the appellation.

Baron and Kenny (1986, p.1176) propose that "a variable may be said to function as a mediator to the extent that it accounts for the relation between the predictor and the criterion". A mediator is a variable that intervenes in a correlation between an independent and a dependent variable in a manner that facilitates that relationship. In statistical terms, controlling for the effects of the mediator variable should nullify or significantly reduce the correlation between the independent and dependent variables. Mediator variables, unlike moderator variables, frequently shift roles from being independent to dependent variables (Baron & Kenny, 1986).

According to this definition, social support may be justifiably deemed a mediator if it intervenes in the relationship between the stressor and the strain to the extent that it escalates the strength of that relationship, and when statistically removed from that relationship, the relationship should weaken significantly. Social support may appear to fit more readily into the mediator category by virtue of what Baron and Kenny (1986) describe as fluidity of movement between being a dependent and an independent variable. The function of a mediator variable, however, is quite the opposite to that held as a fundamental premise of

the buffering hypothesis, namely: that social support *lessens* the strength of the stressor-strain relationship.

Social support, according to Baron and Kenny's (1986) definitions, is evidently neither a mediator nor a moderator in the stressor-strain relationship. The conceptual confusion regarding whether social support is a mediator or a moderator in the stressor-strain relationship is thus rendered moot. The fact that the terms are used interchangeably in the social support literature is not so much a cause for alarm as the fact that they are used at all. It is ironically the imprecision of the term 'buffer' that recommends it for use in discussion of the role of social support in the stressor-strain relationship. It is thus this term that is used in the present study to describe the 'protective' role of social support in the presence of a stressor.

3.6 Measures of Social Support

Many of the inconsistencies in the social support research stem from conceptual confusion and a lack of definitional consensus (Barrera, 1986; Sarason et al., 1990; Vaux, 1991). Social support research has been further confounded by methodological inconsistencies and disparate operationalisations (Heller et al., 1986; Sarason et al., 1990). Cohen and Wills (1985) argue that different measures of social support have consistently shown to be more inclined to reveal certain statistical effects as opposed to other measures evidencing different trends altogether. Main and buffering effects, they argue, are more or less likely to emerge depending on the measures used to excavate them (Cohen & Wills, 1985).

The distinctions between these measures have been drawn according to various criteria. Most commonly distinguished from one another are measures of perceived and received social support (Sarason et al., 1990). Measures of perceived social support tap into a person's subjective perception of being supported (Andrews, Brewin & Rose, 2003; Sarason et al., 1990). Instruments drawing on received social support, on the other hand, measure a person's actual receipt of support from others (Barrera et al., 1981; Boscarino, 1995; Sandler & Barrera, 1984). As Barrera (1986) points out, scales which purport to tap support

received are in fact assessing "perceived-received" support because they require a subjective self report of the support received. For the sake of distinction these measures of "perceived-received" support are referred to in the literature as measures of "received" support.

Measures of perceived and received support have been shown to be weakly correlated, suggesting that received and perceived support are separate and distinct constructs (Sandler & Barrera, 1984; Sarason et al., 1990). This contention is supported by research by Wilcox (1981) and Sarason et al. (1983), which report similarly weak correlations between measures of received and perceived support. In a study by Wilcox (1981) it was found that perceived support, measured by assessing the quality of support, evidenced a greater buffering effect than measures of received support.

Sandler and Barrera (1984) conducted a study using both a measure of perceived and received support, and examined the effects evidenced using each. Compelling evidence for the main effect of social support on levels of reported psychological symptomatology was found when the measure used assessed perceived support. When the measure of support used tapped received support, it failed to evidence any buffering effect in the relationship between stress and psychological distress (Sandler & Barrera, 1984). In his review of the existing research into the role of social support in the stressor-strain relationship, Barrera (1986) argues that the majority of studies which evidence a main effect relationship between social support and distress have employed measures of perceived social support. This trend is also observable in the trauma literature. Studies such as Andrews et al. (2003) have found individuals' satisfaction with the support available to them significantly correlated with symptoms of PTSD. Andrews et al. (2003) found no significant correlation utilising a measure of received support, however.

The research provides compelling evidence for the contention that measures of received and perceived support assess different constructs (Andrews et al., 2003; Barrera, 1986; Sarason et al., 1990). It also supports the argument that perceived support, as opposed to received support, evidences a stronger direct relationship to psychological well-being, and has a more substantial buffering effect within the relationship between stressors and psychological

distress (Andrews et al., 2003; Barrera, 1986). This is a logical result, perhaps, of the limited potential assessing quantity of support, rather than the perceived quality of that support, has for reflecting whether an individual *feels* supported. Measures of received support fail to account for individual differences regarding perceptions of adequate support. Cohen and Wills (1985) explain the fact that buffering effects appear only to emerge when measures of perceived support are employed, by arguing that the buffering qualities of social support are cognitively mediated. They propose that, in the tradition of Lazarus and Folkman's (1984) understanding of stress and coping, the effects of social support are determined to a large degree by the individual's appraisal of being supported. It is quite plausible that an individual with many significant others readily offering assistance and comfort, may feel inadequately supported, whilst another may feel sufficiently supported by just one significant other.

Research appears to suggest that the perception of being supported, rather than the quantity of support received, impacts directly on psychological well-being and predicts fewer psychological sequelae in the face of stress. It is thus arguably of greater value to operationalise the concept of social support in a manner that assesses perceived rather than received support when examining the role of social support in the stressor-strain relationship.

3.7 Modes of Social Support

Integral to an understanding of social support is the acknowledgement that support may take different forms or modes. Various authors have proposed different categorisations of the modes of support available. The distinctions drawn are varied: tangible, intangible, advice and feedback (Tolsdorf, 1976), emotional, esteem and network (Cobb, 1976), emotional, tangible and informational (Wilcox, 1981), esteem, informational, social companionship and instrumental (Cohen & Wills, 1985), and emotional and instrumental (Kaufmann & Beehr, 1989). Barrera and Ainlay (1983) discern 6 modes of support, which arguably allows for a more comprehensive examination of the nature of social support. These modes form the theoretical basis of the scale used for Vaux et al's (1987) Social Support Behaviours Scale

(SS-B), the instrument used to measure modes of support in the present study. It is thus Barrera and Ainlay's (1983) categorisation that will be elucidated further.

Barrera and Ainlay (1983) propose their 6 modes of support as a consolidation of thought from a review of a large body of social support literature. They argue that their classification is the most inclusive and comprehensive – a view that is shared by authors such as Vaux et al. (1987) who have drawn from their theory. Barrera and Ainlay (1983) discern that social support can be divided into the following modes:

Material Aid: providing tangible materials in the form of money and other physical objects.
Behavioural Assistance: sharing of tasks through physical labour.
Intimate Interaction: traditional nondirective counselling behaviours such as listening, and expressing esteem, caring, and understanding.
Guidance: offering advice, information, or instruction.
Feedback: providing individuals with feedback about their behaviour, thoughts, or feelings.
Positive Social Interaction: engaging in social interactions for fun and relaxation.

(Barrera & Ainlay, 1983, p.136)

Cohen and Wills (1985) propose that in the discussion of the role of social support in the stressor-strain relationship it is essential to take cognisance of the specific modes of support being offered. Certain modes of support may be more or less beneficial to an individual depending on the type of stressor (Vaux et al., 1987) and the individual's coping requirements (Cohen & Wills, 1985). Vaux et al. (1987) propose, for example, that emotional support may be inappropriate in the face of a crisis for which one might need practical assistance. They add that practical assistance or advice may come across as invalidating and insensitive in the face of a personal loss (Vaux et al., 1987). Studies such as that by Eckenrode (1983), who found that support acted as a buffer for those in his sample evidencing an internal locus of control, support Cohen and Wills' (1985) contention. Modes of support may vary in effectiveness depending on how well they are matched with the particular coping styles of the individuals on the receiving end.

Vaux et al. (1987) tested the hypothesis that different modes of support are more or less helpful in relation to different stressors. They conducted a series of studies with student samples, examining a range of stressors such as relationship difficulties, bereavement and financial problems. They found that emotional support, best equated with Barrera and Ainlay's (1983) "intimate interaction", and positive social interaction tended to be rated as helpful for all problems. They found that practical assistance, roughly equivalent to Barrera and Ainlay's (1983) "behavioural assistance", achieved only a moderate rate of endorsement across the range of problems. Murphy (1988) found that subjects in her sample of disaster victims reported that practical assistance was not beneficial, but was in fact experienced as an additional stressor. Pines (1983), however, found that the availability of practical assistance was the most protective mode of support against burnout among a sample of teachers.

Cohen and Wills (1985) propose that support that serves to enhance esteem or provide information/advice may be helpful across a wide spectrum of stressors. They argue that social interaction and practical assistance, however, may only be perceived as helpful when they provide the resources required by a particular stressor (Cohen & Wills, 1985). Vaux et al. (1987, p.230-231) conclude that "different modes of support may alter *exposure* to problems, *appraisal* of problems, and *consequences* of problems, in quite distinct ways. These questions constitute an urgent agenda for research in social support: research that requires measures of distinct modes of support"

3.8 Sources of Social Support

In addition to differentiating between different modes of support, it is essential to distinguish the different potential sources of that support. Kaufmann and Beehr (1989, p.192) propose that "social support is best considered as comprised of a variety of different forms of support. This variety not only includes the nature of the support, but also its source". According to Solomon (1986) most individuals do not typically seek formal help following traumatic exposure, but instead turn to their support systems. These support systems include family, loved ones and friends and potentially coworkers and supervisors (Solomon, 1986).

Although modes of support have received increasing attention in the literature, very little research has been conducted into the relative benefits of various sources of support.

Cobb (1976) extols the importance of familial relationships in protecting against the effects of stress. Navia and Ossa (2003) found that the cohesiveness of families predicted fewer PTSD symptoms in the members of the family following a kidnapping. Other researchers have proposed that marital status and quality may impact significantly within the stressor-strain relationship (Coyne & DeLongi, 1986; Viedge, 2001). MacDonald et al. (1999) found that poor family functioning and poor dyadic/marital adjustment each predicted higher levels of PTSD. Solomon (1986) argues that research suggests that familial and marital relationships are more likely to provide the required commitment of support than other sources.

Another important source of support is an individual's circle of friends. Barton (1969, in Solomon, 1986) proposes that following traumatic exposure, friends may offer significant aid, and Perry and Mushkatel (1983, in Solomon, 1986) found that support from friends plays a significant role in psychological adjustment. Various other sources of support may be helpful following traumatic exposure. Support from colleagues and supervisors may be particularly important, for instance, in contexts where the traumatic exposure is work-related (Paton & Smith, 1996). Kaufmann and Beehr (1989) found that supervisor support in the face of occupational stressors was significantly related to psychological adjustment. Kirmeyer and Dougherty (1988) found that supervisor support acted as a significant buffer between work-load and tension-anxiety.

It is evident that support effects have been found for support emanating from a variety of different sources. It is yet unclear, however, as to which of these sources, under what conditions, may be more or less instrumental within the stressor-strain relationship.

3.9 Social Support: Environmental or Individual Variable?

Social support has traditionally been viewed as an environmental variable. Heller et al. (1986, p.466) refer to social support as "the exemplar environmental resource". Studies focusing on the effects of social support among Vietnam veterans have traditionally viewed social support as a product of the macro-climate; as an environmental resource that was not available upon return from Vietnam as a consequence of public derision (Keane et al., 1985). According to Green et al.'s (1985) psychosocial model of trauma, social support is defined as a critical element of the recovery environment. What Green et al.'s model (1985) also alludes to, however, is the way in which social support may be simultaneously considered an individual variable. Green et al. (1985) propose that the provision of support may be viewed as an environmental variable, but the seeking out and receptivity to that support is clearly an individual characteristic.

Research findings indicate that it is the perception of available support rather than the receipt of it that appears beneficial to individuals (Andrews et al., 2003; Barrera, 1986; Sandler & Barrera, 1984). Authors have drawn on Lazarus and Folkman's (1984) understanding of stress and coping in postulating that the effects of social support are determined to a large degree by the individual's appraisal of being supported (Cohen and Wills, 1985; Heller et al., 1986). Cohen and Wills (1985) propose that for social support to impact within the stressor-strain relationship there necessarily needs to be a matching between the nature of the support provided and the individual's coping requirements. What an appraisal model of social support implicitly implies is that social support is not merely an environmental variable, but also a function of individual characteristics. Vaux (1991, p.87) proposes that social support is "best viewed as a dynamic process of transaction between person and environment".

It is clear then that an understanding of the phenomenon of social support overlaps considerably with theories of personality and individual coping styles. This overlap is an area that has only recently received attention in the literature (Bowman, 1999; Lam & Grossman, 1997). Brewin, MacCarthy and Furnham (1989) found that individual appraisals

of being responsible and being the only one to have experienced such a problem were significantly correlated with the perception of available support and the mobilization of that support. A study by Eckenrode (1983) reported that social support had a beneficial impact only among those in his sample evidencing an internal locus of control. Coyne and DeLongis (1986) propose that individuals low in support have been found to score highly on measures of cynicism. It would appear that, as Bowman (1999, p.26) contends, "personality traits affect the perception of social support and the receipt or undermining of it".

It is clear that individual characteristics are important determinants of the effect of social support within the stressor-strain relationship. Perhaps the most important determinant is the individual's orientation towards that support. Brewin et al. (1989, p.354) propose that "in seeking to explain why some people have low levels of support, it is necessary to consider the possibility that they may perceive no suitable support to be available and may actively avoid the opportunity to mix with or confide in other people". Eckenrode (1983) found that those in his sample that exhibited positive beliefs about the efficacy of support were more inclined both to perceive more available support and to mobilize it. Vaux, Phillips et al. (1986) found similar results in their study where a positive orientation towards support was positively correlated with the appraisal of being supported. A more thorough discussion of individual orientation towards support is offered in the following section. What is suggested in the literature is that, as Vaux, Burda et al. (1986, p.159) contend, "support resources of whatever quality are useless if the individual, for one reason or another, is reluctant to utilise them".

3.10 Vaux's Dimensions of Social Support

Vaux (1990) proposes that social support is best viewed as a meta-construct comprising various dimensions. He argues that the components of social support are not yet adequately defined or fully understood, but proposes what he sees to be the core dimensions of the construct. Vaux and his colleagues divide social support into specific supportive acts (e.g. listening, comforting, advising, assisting etc), the subjective appraisal of support (perceptions/beliefs that one is cared for and esteemed by others) and support network

resources (the size, structure and relationship characteristics of support networks). They have designed measures to assess each of these components, two of which, the Social Support Behaviours Scale (SS-B, Vaux, 1982 in Vaux et al., 1987) and the Social Support Appraisals Scale (SS-A, Vaux, 1982 in Vaux, Phillips et al., 1986) have been chosen for the present study. The third measure of social support employed in the present study, the Network Orientation Scale (NOS, Vaux, 1985), accounts for a fourth, but separate, component of social support identified by the same researchers. These four dimensions of support will be discussed in the following section.

3.10.1 Appraisal of Support

In elucidating the appraisal construct, Vaux, Phillips et al. (1986) draw on Cobb's (1976, p.300) definition of social support, namely: "information leading the subject to believe that he is cared for and loved, esteemed and a member of a network of mutual obligations". They emphasise that an important aspect of social support is the individual's belief or appraisal that he/she is supported, irrespective of the objective presence or absence of support (Vaux, Phillips et al., 1986). The substantiation for this construct draws heavily from appraisal theory (Folkman & Lazarus, 1984) and empirical evidence suggesting that the subjective perception of being supported may be the most influential aspect of social support. The measure designed to operationalise this construct, the SS-A (Vaux 1982, in Vaux, Phillips et al., 1986), taps into individual perceptions of being held in high esteem, of being relied upon and well-thought of, and of being missed if he/she were to die. The scale also differentiates between three sources of support, namely: support from family, friends and others.

3.10.2 Socially Supportive Behaviours

Vaux et al. (1987) view the receipt of socially supportive behaviours as a crucial construct in the social support literature. The value of Vaux et al.'s (1987) delineation of this construct, and the operationalisation of it in the form of the SS-B, lies in its particular sensitivity to the variety of different modes of support available. Vaux et al. (1987) categorise socially supportive behaviours into 5 modes:

Emotional Support: expressing concern, affection or caring, providing comfort or encouragement.

Practical Assistance: offering tangible help with a specific task.

Socialising: engaging in social interactions for fun and relaxation.

Financial Assistance: lending or giving money to help.

Advice/Guidance: offering opinion, information, or instruction.

(Vaux et al., 1987, p.231)

It is evident from the modes proposed, that Vaux et al. (1987) have drawn from the work of Barrera and Ainlay (1983) outlined above. The modes delineated by Vaux et al. (1987) are comparable, but for the absence of a "Feedback" mode which they view to be subsumed under "Advice/Guidance".

It is clear from the research reviewed in the previous discussion that measures of perceived social support appear to evidence a more significant impact within the stressor-strain relationship than measures of received support. This suggests that the individual's perception of being supported is a more influential construct than the individual's actual receipt of support. Vaux et al.'s (1987) operationalisation of social support behaviours takes this into account and poses the questions as hypothetical, asking subjects not to rate whether they have received the behaviour described, but whether they perceive that the behaviour would be provided were they to need it. The scale also distinguishes between 2 sources of support, namely: family and friends.

3.10.3 Network Resources

Vaux and Anthassapulou (1987) propose that the size of the network of resources available to an individual is an important facet of social support. They propose that separate to an individual's subjective appraisal of the availability and their satisfaction with their support is the more objective account of how large the network of people providing that support is (Vaux and Anthassapulou, 1987). The Social Support Resources Scale (SS-R) was

developed by Vaux (1982, in Vaux & Anthassapulou, 1987) as a measure of received support.

Although a faithful adherence to Vaux's understanding of social support would include all three of the dimensions described, the SS-R was not chosen for use in the present study for a number of reasons. Firstly, in accordance with Green et al.'s (1985) psychosocial model of trauma, social support is viewed in the present study as both an environmental and an individual variable. To provide an understanding of social support as a product of both it was felt that the NOS (Vaux, 1985) would be a more appropriate instrument, providing as it does, a measurement of an important individual variable. Secondly, it was felt based on the literature, that measures of perceived rather than received support would be more appropriate in the examination of the impact of social support in the exposure-PTS relationship. Lastly, the SS-R's cumbersome format did not recommend it for the present study. The researcher used an instrument with a comparable format – Sarason et al.'s (1983) Social Support Questionnaire – in an earlier study (Basedau, 1999), which found the scale to evidence a poor response rate and a high rate of missing data.

3.10.4 Network Orientation

Vaux (1985) has drawn on the work of Tolsdorf (1976) in elucidating a construct he perceives to straddle both social support and personality theory. Tolsdorf (1976, p.413) defines the concept of network orientation as "a set of beliefs, attitudes, and expectations concerning the potential usefulness of his network members in helping him cope with a life problem". Tolsdorf (1976) found that a negative network orientation was the single most significant predictor of psychiatric maladjustment in his study comparing psychiatric patients to a control group. He found that the control group had positive network orientations, seeking out members of their support network for advice, support and feedback. The psychiatric patients, by comparison, were found to exhibit negative orientations and failed to mobilize their resources (Tolsdorf, 1976).

Vaux (1985) has proposed this facet of social support as an important link between social support and personality theory, and has operationalised it in the form of the Network Orientation Scale (NOS). The scale items draw on three factors, namely: advisability/independence (attitudes about the advisability and usefulness of seeking help and the expression of independence), history (reports of a positive or negative history of help-seeking behaviour) and mistrust (beliefs suggesting that others cannot be trusted).

Tolsdorf (1976) holds that the relationship between the individual characteristics and environmental resources involved in the social support process are reciprocal. He states that "an individual's expectations and beliefs help determine his behaviour, but they in turn are partially determined by the characteristics of the network. Conversely, an individual's network is shaped and maintained by his use of it and by his attitude towards it. Thus the individual and the network are in constant interaction, both influencing and being influenced by the other" (Tolsdorf, 1976, p.416).

A comprehensive understanding of how these individual and environmental variables interact in the social support process has been the subject of little empirical investigation to date. Most research has focused on the availability and perception of environmental resources to the neglect of the particular individual variables that may enable or disable those resources to take effect (Brewin et al., 2003). Brewin et al. (2003, p.369) propose that "greater understanding of social support mechanisms is likely to follow from investigations of individuals' hopes and fears concerning their confidants and other potential sources of support". The use of the NOS facilitates the investigation of such in the present study. Its use in conjunction with 2 measures of the perception and type of environmental resources available affords a unique opportunity to examine how these constructs are related and how each impacts within the exposure-PTS relationship.

3.11 Social Support and Posttraumatic Stress

Of 14 risk factors reviewed in a recent meta-analysis of a body of 77 articles examining the correlates of PTSD, social support was found to have the largest average weighted effect

size (Brewin et al., 2000). What this suggests is that social support has consistently emerged as significantly correlated with symptoms of PTSD following exposure. Furthermore, a recent South African study evidenced a significant relationship between symptoms of secondary traumatic stress and social support (Ortlepp & Friedman, 2002). Research into the effects of social support within the exposure-PTS relationship, in the tradition of more generic stress research, has been contradictory, however. Studies have found social support main and/or buffering effects across an array of different populations, utilising an array of different measures (Boscarino, 1995; Joseph et al., 1993; Kazak et al., 1997; Keane et al., 1985; McDonald et al., 1999; Taft et al., 1999). Other studies have failed to evidence any effect, however (Dougall et al., 2001; Navia & Ossa, 2003; Stromnes, 1999; Ullman & Filipas, 2001). Still other studies have evidenced mixed profiles depending on the measures used within the study (Andrews et al., 2003; Green & Berlin, 1987) or the point in time following exposure that the social support was measured (Cook & Bickman, 1990).

Andrews et al. (2003) criticise the majority of research that has been conducted into the role of social support within the exposure-PTS relationship for employing measures of received, as opposed to perceived, support. They argue that, in accordance with the findings of more generic stress research, social support has been shown to have a more consistent relationship with PTSD when the study has employed a measure of perceived support (Andrews et al., 2003). Trauma studies have tended to employ a single measure of social support, often tapping entirely different facets of support according to Vaux et al.'s (1987) distinctions. This makes comparison across studies difficult and may account for the contradictory findings.

Certain trauma studies have utilised measures of perceived support (Andrews et al., 2003; Cook & Bickman, 1989; Dougall et al., 2001; Joseph et al., 1993; Ortlepp & Friedman, 2002; Taft et al., 1999), some measures of both perceived and received support (Boscarino, 1995; Brewin et al., 1989; Green & Berlin, 1987; Keane et al., 1985; Murphy, 1988), and others just measures of received support (Ullman & Filipas, 2001). Many of the instruments utilised consist of less than 7 items (Andrews et al., 2003; Dougall et al., 2001; Joseph et al., 1993) or have been "unvalidated" (Green & Berlin, 1987). Certain recent studies have failed

to adequately report on the properties of the scales used, making it impossible to judge what facet of social support is in fact being assessed (Kazak et al., 1997; Navia & Ossa, 2003). These sorts of inconsistencies make comparison across studies a hazardous exercise. In addition, there has been a lack of thorough investigation into the specific modes of social support that may be impacting within the exposure-PTS relationship. Cook and Bickman (1990) found a mixed profile across different modes of support depending on the point in time at which the support was assessed. Murphy (1988) found that material aid was described by many in her sample as a significant stressor in itself following a disaster. There is clearly a need for clearer definition of what facets of social support appear to impact in what manner on the exposure-PTS relationship.

An important area of investigation within the exposure-PTS relationship has been the social support chicken and egg debate. The question of whether a decline in social support leads to increased PTS or whether the symptoms of PTS lead to decreased social support has baffled researchers. Cross-sectional studies have been unable to resolve this debate. Recent longitudinal studies, however, have produced interesting findings. Keane et al. (1985) examined social support in a sample of Vietnam veterans over a period of time. They assessed individual perceptions of the support available one to three months before Vietnam, one to three months following Vietnam and at the present time and compared these scores to a control group (Keane et al., 1985). They concluded that for the PTSD veterans, "qualitative and quantitative measures of social support systematically declined over time to extremely low levels at the present time period" (Keane et al., 1985). What studies such as Keane et al.'s (1985) suggest is that there is reason to believe that PTSD may lead to diminished perception and/or receipt of social support. MacDonald et al. (1999) propose that PTSD and social support have a reciprocal relationship.

Researchers have identified a similar chicken/egg quandary with regards to the relationship between social support and traumatic exposure. It is plausible not only that traumatic exposure may lead to diminished social support, but also that poor social support may place an individual at increased risk of exposure. In addition, Taft et al. (1999) propose that exposure to traumatic events may significantly impact on an individual's perception of their

support. They propose that an individual's appraisal of available support may be jeopardised by their traumatic exposure (Taft et al., 1999). A reciprocal relationship is thus also postulated for social support and exposure. It is clear then from the preceding discussion that any causal claims are likely to oversimplify the complex relationship between exposure, social support and PTSD symptoms, and that correlational claims are far more appropriate.

3.12 Conclusion

It is clear from the preceding discussion that both the conceptualisation and operationalisation of the concept of social support are fraught with confusion and contention. The assumption of shared meaning in the usage of the term 'social support' is arguably the origin of this confusion. Most disturbing is not the fact that social support is more complex than first assumed, but rather the failure to acknowledge that fact. It is apparent that an appreciation for the multifaceted nature of the construct, and a specification of which of these facets is being measured in which study, is not common practice in the social support literature. In the traumatology literature it is even less so. The usage of the general term 'social support' persists, as does the consistent reporting of contradictory findings when its role is examined in the exposure-PTS relationship. The present study aimed to measure three facets of social support and to observe the manner in which each of these facets impacts within the exposure-PTS relationship. In this way it aimed at shedding light on the contention regarding the exact role of social support in the traumatology literature. The following chapter presents a discussion of the concepts of social support and PTS as they pertain specifically to ECPs and allied emergency services personnel.

CHAPTER 4: EMERGENCY CARE PRACTITIONERS (ECPs)

4.1 Introduction

Emergency Care Practitioners (ECPs) are at risk of suffering the effects of stress, particularly PTS (Mitchell & Dyregrov, 1993). This chapter will explore the nature of the work that places them at risk and will investigate the manner in which stress manifests in this profession, particularly in the South African context.

In the previous two chapters the concepts of PTS and social support were explored. This chapter aims at investigating these two concepts further, with particular reference to the manner in which they impact on ECPs and allied emergency services personnel.

McCammon's (1996) framework will be presented for understanding factors that impact on the exposure-PTS relationship among ECPs and allied emergency services personnel, and the relevant research in the area, both local and international, will be examined within this framework. This chapter aims at exploring the relevant research examining social support in these professions and understanding those factors unique to ECPs and allied emergency services personnel that may make this an elusive and/or under-utilised resource.

4.2 Defining the term 'Emergency Care Practitioner'

Emergency Care Personnel are defined in the Health Professions Act as practitioners trained for the purposes of the "rescue, evaluation, treatment and care of an ill or injured person in an emergency care situation and the continuation of treatment and care during the transportation of such person to or between health establishment(s)" (Health Professions Act of 1974/ 2002, p.1). According to the Health Professions Council of South Africa, Emergency Care Practitioners are persons registered as paramedics, ambulance emergency assistants, basic ambulance assistants, operational emergency care orderlies, emergency care assistants and/or persons who hold an accredited first aid certificate. For the purposes of this research report the term 'Emergency Care Practitioner' (ECP) is used to denote three

specific qualifications within the emergency care profession, namely: paramedics, ambulance emergency assistants and basic ambulance assistants. What distinguishes these three categories from operational emergency care orderlies and emergency care assistants is the fact that they are called to attend to their patient(s)at the scene of the injury or illness and required to transport the patient(s) to a health establishment. This involves quite a different set of skills and job stresses to the operational care orderlies and emergency care assistants who are based within trauma units and are concerned primarily with receipt of patient(s).

4.3 Distinguishing between Emergency Care Qualifications

The emergency care profession subsumes three qualifications of ambulance worker. The basic ambulance assistant (BAA) requires the first of these qualifications. He/she is required to have completed a 1-month basic life support qualification, which equips him/her with the necessary skills to accompany an ambulance emergency assistant or paramedic and to administer basic care on scene. The second of these qualifications is the intermediate life support qualification. This qualification equips the emergency care practitioner with the title of ambulance emergency assistant (AEA) and the skills to administer care without supervision on scene. The highest of these qualifications is that of the critical care assistant (CCA) or paramedic. The paramedic is equipped to administer advanced care and to supervise BAA's and AEA's on scene.

Within the private ambulance service from which the sample for the present study was drawn operations managers and base managers are all qualified paramedics and are in most cases on 24-hour call, 7 days a week. BAA's and AEA's work 12-hour shifts without break for 3 weeks, with 1 week off. Their shifts are rotated so that they work both day and night shifts. When on shift, the BAA's and AEA's respond to every call received, whereas paramedics are only dispatched when their expertise is required.

4.4 The Nature of Emergency Care

"A paramedic has to be able to carry an injured person up a wet, grassy hill in the dark, dodge stray bullets unarmed to reach a dying child; enter homes the health inspector would not touch, and not wrinkle his uniform. He has to be able to lift three times his own weight, crawl into wrecked cars with barely enough room to move, and console a grieving mother as he is doing CPR on a baby he knows will never breathe again…….. He can deal with multi-victim trauma, coax a frightened elderly person to unlock their door, comfort a murder victim's family and then read in the daily paper how paramedics were unable to locate a house quick enough, allowing the person to die; a house which had no street sign, no house number, no phone to call back"

Anonymous (Unpublished)

According to the definition set down in the Health Professions Act, ECPs are required to respond to calls for medical attention, to render medical assistance on scene, and to transport patient(s) to health care facilities. The succinctness of the definition arguably belies the multitude of tasks the ECP is required to perform in the course of his/her daily work routine. The quote above gives a poignant personal account of what that work routine entails. The critical nature of the emergencies ECPs tend to demands that they respond as quickly as possible and race to and from the scene within the shortest possible response time. The trauma scenes tended to always involve injury and regularly involve multiple deaths, mutilated bodies (McCammon, 1996) and the presence of grieving loved ones (Beaton et al., 1998). ECPs are required to render aid to victims of crime such as sexual assault and murder and to tend to scenes of attempted and completed suicides (Davidson, 2001). They are often called upon to render assistance in hazardous environments where their safety is threatened (Grigsby & McKnew, 1988) and to risk exposure to disease, such as HIV/Aids (Davidson, 2001, McCammon, 1996). ECPs are frequently called upon to render assistance to injured children (Beaton et al., 1998; Georgiou & Ortlepp, 1998). They are often required to tend to the injured perpetrators at the scene, in spite of moral quandaries or personal disgust at doing so (Davies, 2001; Georgiou, 1997). ECPs are required to pronounce patients dead and inform family members on scene when attempts at saving them have failed (Davidson,

2001; Davies, 2001). ECPs routinely encounter death and dying in the course of their jobs (Palmer, 1983) and carry a profound responsibility for the safety and lives of others (Grevin, 1996).

4.4.1 Emergency Care in South Africa

The provision of emergency care in South Africa is almost exclusively accounted for by three service providers. The first of these is the provincial or public service and the remaining two are private organisations. The sample for the present study was drawn from Netcare 911, the larger of the two private organisations (statistics provided by Netcare 911). The organisation was founded in 1998 and employs approximately 3200 of South Africa's emergency care personnel. Their call centre, servicing the whole of South Africa, receives an average of 80 000 calls per month. The number of dispatches per station per day varies greatly from area to area.

Due to the recency of the emergence of private ambulance services in South Africa, and the inception of Netcare 911 specifically, much of the experienced staff is constituted of ECPs who previously worked in the public sector. There is also a large contingent of younger graduates who have recently entered the profession. According to statistics provided by Netcare 911, the average ECP job turnover rate within the organisation is 4 years.

The nature of the medical emergencies to which ECPs are called varies from asthma attacks, paediatric drownings, heart attacks, drug overdoses and suicide attempts to tending to victims of violence and motor vehicle accidents. According to organisational estimates, a large portion of trauma-related calls responded to are road accidents (estimate provided by Netcare 911). When compared to international statistics, South Africa evidences one of the highest rates of road deaths. In 2002, appoximately 220 per 100 000 of the population were killed on South African roads (South African "Arrive Alive" Campaign, 2004). This dwarves road death rates in countries such as the USA, which in 2002 evidenced a rate of approximately 15 per 100 000, Australia (approximately 9 per 100 000) and the United Kingdom (approximately 6 per 100 000) (International Road Traffic and Accident Database,

2004). Gauteng, the province from which the sample for the present study was drawn, evidences one of the highest rates of road deaths within South Africa, with a rate of approximately 288 per 100 000 (South African "Arrive Alive" campaign). According to the South African "Arrive Alive" campaign, every day approximately 25 people lose their lives on South African roads and it is estimated that one collision takes place every 6 seconds.

The number of road deaths and the frequency of road accidents in South Africa demands that the South African ECP respond to an alarming call volume. What these statistics also serve to highlight is the nature of the calls the South African ECP responds to on a daily basis. A large portion of these calls involve assisting victims of motor vehicle and pedestrian accidents, often rescuing the injured, dealing with multiple injuries and deaths and frequently tending to injured and dying children.

Another defining characteristic of the South African context, which distinguishes the work of South African ECPs from the work of their American, Australian and British counterparts is the climate of violence in which they work. South Africa evidences a rate of serious crimes several times higher than those of the United States and Western Europe. With an average of 46 people murdered per 100 000 in 1997, the World Health Organisation was prompted to rank South Africa as "the crime capital of the world" (World Health Organisation, 1998). According to current statistics released by the Department of Safety and Security, this rate increased to approximately 49 people murdered per 100 000 in 2000 (South African Department of Safety and Security, 2001).

Work as an ECP in a violent context such as South Africa presents unique challenges. According to statistics provided by the Department of Safety and Security, in 2000, approximately 120 cases of rape were reported per 100 000 of the population (South African Department of Safety and Security, 2001). The appalling number of rapes that occur in South Africa every day, many of these involving children, dictate that South African ECPs work with human tragedy and traumatised patients on a daily basis. The sheer number of crime-related injuries and deaths dictate that the South African ECP respond to a high rate of critical calls. The South African ECP is routinely required not only to assist victims of

violent crimes, but frequently to do so under hazardous circumstances. Unlike their international counterparts, ECPs servicing the informal settlements in South Africa commonly wear bullet-proof vests. In a country with a history of institutionalised violence and a legacy of suspicion of uniforms and sirens, the South African ECP is viewed by some as a threat and as a legitimate target for attack.

Newspaper articles detailing attacks on ECPs are not uncommon. In 2002, two ECPs were shot and killed whilst assisting a patient on scene in Pretoria (Pretoria News, April, 2002). In 2003, two ambulances came under attack in the Western Cape (Cape Argus, September, 2003). Most recently, two Kwa-Zulu Natal ECPs were lured into an ambush by a hoax call, one of the ECPs was raped and their ambulance was stolen (The Star, February, 2004). According to the National Health Department, 43 provincial ambulances were hijacked across South Africa in 2002 and 2003 (National Health Department, 2004, cited in the Sunday Times, February, 2004).

Davies' (2001) study of the coping styles of South African ECPs, offers a poignant anecdotal account of working as an ECP in a violent society:

"A good friend of ours was murdered and I did the call. I had to do the call, as I was on duty that month…...As we walked in the garage the robbers were still inside, the guys just shot them. I walked on scene and here was one of my good mates doing CPR on one of my other good mates. We tried and I knew it was hopeless. I think from that day onwards I saw things in a different light. I had to take time off….I've seen someone blundered to death by a hammer….then the criminal gets injured by the cops and you must save him as well. No. That was a turning point for me.." (Mike, an ex-paramedic, quoted in Davies, 2001, p.144)

Such an account may be a rarity in countries such as America, Australia and the United Kingdom. The fact that it is far from rare in South Africa sets South African ECPs apart, and distinguishes their experiences from those of their international counterparts.

4.5 Defining Critical Occupations and Emergency Services Personnel

Various terms have been employed in the literature to describe those professions employed to deal with disasters and potentially traumatic events. These include "emergency personnel" (Armstrong, O'Callahan & Marmar, 1991; Grevin, 1996) and "emergency workers" (Beaton et al., 1998; Georgiou & Ortlepp, 1998; Gibbs, Drummond & Lachenmeyer, 1993; McCammon et al., 1988; Moran & Britton, 1994; Viedge, 2001). The terms have been used in most instances to denote members of the police, fire and emergency medical professions. Other terms such as "disaster workers" (Dunning, 1990; Mitchell & Dyregrov, 1993) and "rescue workers" (Lundin & Bodegard, 1993; Schooler, Dougall & Baum, 1999) have been used more loosely to encompass volunteers (eg Schooler et al., 1999), Red Cross workers (eg Armstrong et al., 1991), dog-handlers, interpreters, teachers and radio operators (eg Lundin & Bodegard, 1993).

The term "critical occupation" was coined by Paton and Violanti (1996) to describe those professions whose members are exposed to potentially traumatic stressors in the course of their work. The term encompasses two quintessential characteristics of the emergency and helping professions. It describes the critical role these professionals play in protecting and serving their communities (Paton & Violanti, 1996). It also describes the potential for exposure to traumatic stressors that may exert a critical impact on their psychological well-being (Paton & Violanti, 1996). Paton and Violanti (1996) explain that the term could potentially encompass a wide range of professions, but is most commonly used to denote emergency medical service professionals, firefighters and police officers. The term "emergency services personnel" has been used in other studies to denote the same categories of personnel (Grigsby & McKnew, 1988; Marmar et al., 1996; Weiss et al., 1995).

The terms "critical occupation" and "emergency services personnel" are employed to denote these three professions in the present study.

4.6 Stress in Critical Occupations

ECPs work in a chronically stressful work environment (Grevin, 1996). Grigsby and McKnew (1988) argue that ECPs face the combined stressors of two highly stressful occupations: health care professionals and emergency services personnel. As a consequence they are forced to cope not only with the demands of a "helping profession" but also the demands of an emergency care context. ECPs, like health care professionals, have to make life and death decisions and come into contact with human pain and misery. They have the added stress, however, of having to do this in potentially hazardous public environments (Grigsby & McKnew, 1988). Emergency care by its very nature requires extended and often emotionally-evocative involvement with patients, which results in a high level of emotional arousal (McCammon, 1996). According to McCammon (1996), ECPs are at risk of developing stress-response syndromes due to the intensity of this involvement.

In her study of South African ECPs, Green (1999) discerns 8 sources of potential stress. The first of these is family stressors, which include possible familial and marital discord. The second is work stressors, which can include work overload, boredom, lack of control, the effects of shift work, and poor pay. Green (1999) adds that another significant work stressor is that of equipment failure or lacking the necessary equipment. The third potential source of stress for the ECP is found in social and interpersonal relationships. Green (1999) proposes that these stressors may include conflicts with colleagues, conflicts with administration and a feeling of being unappreciated by colleagues and the public. Green (1999) argues that a lack of social and interpersonal support can lead to demoralisation. The fourth source of potential stress is environmental stressors. These include dealing with noise, overcrowding, temperature extremes, spectators on scene and the pressures of rapid response and urgent decision-making (Green, 1999).

The fifth source is that of financial and legal stressors, which include poor pay and a propensity to supplement income by working a second job. Sparrius (1992) found this moonlighting phenomenon to be common among South African ECPs. Green's (1999) sixth source of potential stress is adaptational stressors, which includes organisational

restructuring and rotation. The seventh source of potential stress is physical stressors, which include eating take-away food on shift, smoking, alcohol-abuse, disrupted circadian rhythms (Green, 1999). This may also include the physical demands of rescuing and carrying patients on scene. Low occupational status is cited as the eighth potential source of stress, and it includes feeling disrespected by the public who may be perceived to take advantage of ECPs by calling on them for minor complaints for example (Mitchell, 1984, in Grevin, 1996).

The stressful nature of the ECPs work is such that it may threaten to overwhelm an individual's resources and threaten his/her well-being. Of particular concern is the continuous and repetitive nature of the occupational stress experienced among ECPs (Grevin, 1996). It relies on individual coping styles and appraisals to determine whether this stress will manifest as a stress-response syndrome (McCammon et al., 1988). The cumulative exposure to organisational and critical stressors in the line of duty may erode at the ECPs resources and result in the phenomenon known as "burnout" or posttraumatic symptoms respectively (McCammon, 1996).

Dutton, Smolensky, Leach, Lorimor & Hsi (1978 in Mitchell & Dyregrov, 1993) found in their study that paramedics reported higher levels of job stress than firefighters. Goldstein, Jamner & Shapiro (1992, in McCammon 1996) found that the heart rates and blood pressure of the paramedics in their sample was outside the normal range when the paramedics were en route to a call, at the accident scene and at the hospital. These researchers concluded that attrition within the field of emergency care and early exit from their occupation may prevent paramedics from developing hypertension (Goldstein et al., 1992, in McCammon, 1996). Grigsby & McKnew (1988, p. 55) found that the ECPs employed in their study evidenced "the highest mean burnout score yet reported for any group of health professionals". They added that the burnout score evidenced was "astonishing" (Grigsby & McKnew, 1988, p.62). The phenomenon of "burnout" examined in studies such as Grigsby and McKnew's (1988), as it was suggested in chapter 2, may in reflect elements of secondary traumatic stress disorder.

The term "burnout" is defined by Maslach (1982) as a syndrome of symptoms arising from chronic exposure to organisational stressors. Maslach (1982) has discerned 3 symptom clusters that define burnout, namely emotional exhaustion, depersonalisation and low job satisfaction. Garden (1995 in Green, 1999) contends that depersonalisation may be the most problematic of these symptoms in the helping professions, where levels of empathy are thought to impact significantly on the quality of care provided. Grevin's (1996) exploration of stress among urban paramedics found that scores were significantly low on the empathy measure employed. Taken together, these burnout symptoms are believed to contribute to a lack of concern for patients and high levels of attrition within the emergency care profession (Grigsby & McKnew, 1988).

There has been increasing concern in the literature regarding the alarming job turnover rates among ECPs (Grevin, 1996; Grigsby & McKnew, 1988; McCammon, 1996). According to statistics provided by Netcare 911, the organisation from which the sample for the present study was drawn, the average ECP job turnover rate within the organisation is 4 years. A subject in the sample employed for the present study stated that "Paramedics are dispensable equipment - we have a shelf-life. We might as well write our qualifications on our hands and wash it off in 4 years time. This is not a career" (personal communication, 2004). This quote captures the sentiment felt by many in the emergency care profession, and is of concern to the organisations that employ them and the mental health professionals who seek to alleviate the effects of work-related stress.

Mitchell (1984, in Grigsby & McKnew, 1988), in his study of a sample of paramedics, distinguished between two categories of work-related stressors, namely: administrative and clinical factors. Administrative stresses in Mitchell's study included low pay, long hours, volume of paperwork, lack of administrative support, and the attitudes of colleagues (Mitchell, 1984 in Grigsby & McKnew, 1988). Clinical stressors included continuous exposure to human tragedy, pressure to perform under difficult conditions, and physical dangers (Mitchell, 1984 in Grigsby & McKnew, 1988).

Mitchell (1984 in Grigsby & McKnew, 1988), in his study of paramedics, found that occupational factors accounted for higher levels of stress than clinical factors. Sparrius (1992), in her study of South African ECPs, reported a surprising emphasis among respondents on organisational stressors and little endorsement of the potentially traumatic stressors expected to have a high impact. Green (1999) found a similar emphasis among her South African ECP sample. These organisational stressors included dealing with ill-equipped vehicles, favouritism, and lack of recognition by management and the public (Sparrius, 1992). Perhaps counterintuitively, Sparrius (1992, p.89) found that emergency work in which the respondents were exposed to potentially traumatic stressors were said to afford "their greatest sense of achievement", whilst working a quiet shift was rated as stressful. Sparrius' (1992) sample did report stress in response to traumatic exposure such as being placed in physical danger, but these stressors were reported far less frequently than the organisational stressors.

Paton and Smith (1996) and McCammon (1996) argue that the members of critical occupations are more likely to attribute their stress to organisational stressors than to clinical stressors. Authors argue that there is a "cowboys don't cry" culture inherent in the emergency care profession (Davies, 2001; Green, 1999; McCammon, 1996) and allied critical occupations such as firefighters (Bryant & Harvey, 1996; Lundin & Bodegard, 1991) and police officers (Gersons, 1989; Kopel & Friedman, 1997; Violanti, 1996). It is perhaps more acceptable in these professions to complain about one's boss for instance, than it is to admit to an emotional response to a call (Everstine & Everstine, 1993). McCammon (1996) argues that because the nature of the work undertaken in critical occupations is such that routine events are interspersed with physically and emotionally demanding events, it is particularly difficult to tease the occupational stress out from the traumatic stress. The possibility of attributional bias brings into question the actual relative impact of clinical and organisational stressors, but it is clear that what is peculiar to critical occupations is that both of these sorts of stressors are present.

4.7 Traumatic Stress in Critical Occupations

Members of critical occupations, although exposed to many traumatic stressors which resemble closely those experienced in combat by soldiers (Grevin, 1996), for example high exposure to human suffering and death under hazardous circumstances, cannot be classified as military, nor can they be classified as civilian. Falling in a sort of limbo between strictly "civilian" and strictly "combat" exposure, critical occupations have been relatively neglected in the traumatology literature (Mitchell & Dyregrov, 1993; Paton, 1996). Paton (1996, p. 5) describes the research that has been conducted in the area as "sparse". Weiss et al. (1995) argue that there has been considerable interest in the consequences of traumatic exposure among victims of disaster and that considerably less research has been conducted into the consequences for those who help: ie the members of critical occupations.

Mitchell and Dyregrov (1993) attribute this neglect to a pervading belief that training adequately equips emergency services personnel with the skills to cope with the traumatic incidents they are forced to confront in the course of their duties. Members of these professions are expected, by virtue of their training, to be "superhuman" and invulnerable to the effects of stress (Paton, 1996). Recent research has exposed the naivete of this assumption, by demonstrating that symptoms of PTS are in fact rife in such professions. Authors such as Mitchell and Dyregrov (1993), Weiss et al. (1995), Paton (1996) and McCammon (1996) argue that members of critical occupations are in fact at increased risk of developing posttraumatic sequelae by virtue of the high rates of traumatic exposure they confront in the course of their work.

A study by Lundin and Bodegard (1993) into the psychological impact felt by firefighters and untrained volunteers following an earthquake, reported no significant difference in symptoms between the trained and the untrained. Research by Paton (1994) into the effectiveness of training in protecting emergency services personnel from the consequences of traumatic exposure, found that training did not protect the sample of firefighters employed from developing PTS symptoms following an earthquake. In fact Paton (1994)

found that the firefighters exhibited more symptoms than the volunteers involved in the rescue operation. Paton (1994), drawing on Horowitz's (1976) Information-Processing Model, proposed that critical incidents may overwhelm the training schemata of emergency services personnel and that, paradoxically, these schemata may disadvantage them when they are confronted with a situation "outside *their* range of normal experience" (APA, 2000). This research serves to suggest that training is not the protective factor many believe it to be, and may be quite the opposite in the face of the atypical demands of a critical incident such as a disaster. Research by Moran and Britton (1994, p.575) into the hardiness of a sample of paramedics, concluded that their data "did not support the idea that emergency workers are hardier than most". In fact they found that the paramedics scored lower on their hardiness measure than the scores previously reported for a sample of American urban bus drivers (Moran & Britton, 1994). It is clear that the belief that members of critical occupations are invulnerable by virtue of their training cannot be assumed.

Research by McCammon et al. (1988, p.365) into the incidence of PTSD in a sample of police, firemen, and hospital workers following an apartment building explosion, concluded that "disastrous events involving extensive human suffering have a lingering psychological impact on many emergency workers". Carlier, Lamberts and Gersons (1997) found that 7% of their sample of police officers had PTSD, and that 34% manifested PTS symptoms. In a study by Manolias and Hyatt-Williams (1993, p.389) 67% of police officers interviewed following a shooting incident reported "a marked emotional reaction". In their study into the incidence of PTSD in a sample of disaster workers involved in a rescue operation following the 1989 Loma Prieta earthquake, comprising police officers, firemen and paramedics, Marmar et al. (1996) found that 9% of the subjects manifested severe symptoms of PTSD. Bryant and Harvey (1996) found that 17% of their sample of firefighters reported significant PTS and 9% reported extreme PTS. Grevin (1996) found that 20% of her sample of urban paramedics manifested symptoms of PTSD. There is a volume of recent studies into PTS in members of critical occupations reporting similarly high symptom levels (Pole et al., 2001; Robinson et al., 1997). Studies like these serve as substantial refutation of the assumption that training exempts ECPs, and other emergency services personnel, from the psychological injury exposure to trauma engenders.

Mitchell and Dyregrov (1993) observe that what the belief that training provides ECPs and emergency workers with an armour against PTS neglects to account for, is the normality of stress responses which are in fact an expected and natural aspect of emergency work itself. The consequences of the belief in such exemption from PTS can be clearly observed in the emergency services (Dunning, 1990). Dunning (1990) argues that although emergency organisations are scrupulous about enforcing precautions against physical injury, there is a pervasive lack of attention afforded the psychological ramifications of emergency work.

4.7.1 Critical Incident Stress vs Cumulative Stress

The psychological sequelae following disaster and rescue work have been the focus of much of the research into PTS in critical occupations (see Armstrong et al., 1991; Dunning, 1990; Dyregrov et al., 1996; Lundin & Bodegard, 1993; Marmar et al., 1996; McCammon et al., 1988; McFarlane, 1989; Paton, 1994; Schooler et al., 1999; Weiss et al., 1995). The majority of research into PTS among ECPs and other emergency services personnel has thus tended to focus on critical incident stress (Paton, 1996). Less attention has been afforded the routine stressors encountered on a daily basis, which may be potentially traumatic (Beaton et al., 1998, Beaton, Murphy, Johnson, Pike & Corneil, 1999). Everstine and Everstine (1993) argue that these seemingly routine tasks are often forgotten about in the media as they lack the sensationalism of major disasters.

A study conducted by Genest, Levine, Ramsden & Swanson (1990, p. 308) into symptomatic distress among volunteer ECPs following a routine cardiopulmonary resuscitation, found high levels of distress and reported that “no respondent was entirely free from unbidden recollection of the experience”. Beaton et al. (1998) found that the paramedics in their study rated many tasks that might be considered “routine” within their profession as highly stressful. These included performing cardiopulmonary resuscitations, rendering aid to seriously injured children, dealing with multiple casualties and working with dangerous psychiatric patients (Beaton et al., 1998). It is evident that ECPs are at risk of developing PTS symptoms as a consequence not only of involvement in disaster

situations, but also in response to the more 'routine' tasks their profession dictates they perform.

The research that has been conducted into PTS among emergency services personnel that has not focused on the consequences of disasters has tended to focus on the effects of discrete critical incidents such as shootings (eg Gersons, 1989; Manolias & Hyatt-Williams, 1993; Stratton, Parker & Snibbe, 1984). Less attention has been afforded the cumulative, potentially traumatic, stressors that may gradually erode coping thresholds (Beaton et al., 1998, Beaton et al., 1999). Members of critical occupations are routinely exposed to threats to their own and colleagues' safety, injuries and deaths of children, gruesome victim incidents, suicides and mass casualty incidents (Beaton et al., 1999). Palmer (1983, p. 83) explains that because ECPs routinely encounter injury, death and dying under trying physical and emotional conditions they represent a "special occupational group". They are 'special' by virtue of the fact that exposure to potentially traumatic incidents is 'in the job description' so to speak. Weiss et al. (1995) refer to Green's (1993) dimensions of trauma and argue that emergency services personnel are routinely exposed to many, if not all, of the dimensions described. Grevin (1996) compares paramedics' frequent exposure to human suffering and death in hazardous environments to combat-exposure. She proposes that paramedics are vulnerable, not unlike soldiers in combat, to suffering symptoms of PTS in the course of their everyday duties (Grevin, 1996).

Bonifacio (1991, p. 182) describes the potentially traumatic stressors that may be encountered by police officers, and members of other critical occupations, as "little traumata". He argues that these individuals are exposed to a number of "small tragedies" on a daily basis, which he explains, may have a "cumulative impact" (Bonifacio, 1991, p.182). Grigsby and McKnew (1988, p. 56) describe ECPs as suffering the consequences of "chronic exposure to human tragedy". Bryant and Harvey (1996, p.58) propose that repeated exposure may lead to "accumulative effects" and increase an individual's vulnerability in the face of future exposure. Grevin (1996, p.492) describes the nature of paramedics' exposure to traumatic stressors as "continuous and repetitive".

Mitchell and Bray (1990, in McCammon, 1996) have distinguished between "cumulative stress" and an "acute stress reaction" in their work with emergency services personnel. McCammon (1996) likens the "acute stress reaction" described to critical incident stress. It is argued that both of these forms of stress are present in critical occupations (McCammon, 1996; Mitchell & Bray, 1990 in McCammon, 1996). There is a suggestion in the emergency services literature that cumulative stress may result in a different syndrome of symptoms to those described by the PTSD diagnostic category. Grevin (1996, p. 492) has argued that the continuous exposure paramedics endure may result in a chronic form of PTSD that "has been extremely refractory to treatment interventions". In a comparison of the effects of single exposure and repeated exposure to traumatic stressors among firefighters, Bryant and Harvey (1996) found that those that reported multiple traumas evidenced higher levels of PTSD. Paton and Smith (1996, p.32) argue that "repeated exposure to traumatic events would be expected to elevate baseline levels of stress symptomatology to a higher level". Moran and Britton (1994) propose that an ECP's length of service may be a significant predictor of PTS because, they argue, ECPs may decompensate upon continued exposure to potentially traumatic stressors. They go as far as to argue that the coping skills employed by members of the profession, whilst more or less effective in relation to discrete stressors, are unlikely to effectively defend against the effects of chronic exposure (Moran & Britton, 1994).

Research into the cumulative effects of exposure to traumatic stressors within critical occupations serves to support Herman's (1992) contention that repeated exposure may result in a more severe syndrome of symptoms, a syndrome she refers to as "complex PTSD".

4.7.2 Secondary Traumatic Stress

According to Figley (1995), members of critical occupations are at risk of developing STS by virtue of their intimate involvement with victims of disaster and tragedy. Emergency services personnel are considered to be the secondary victims of disaster (Eranen & Liebkind, 1993). In addition to the direct exposure members of these professions endure, they are required to be witness to the trauma endured by others. They frequently experience

secondhand the losses experienced by primary victims and their loved ones (Eranen & Liebkind, 1993). The phenomenon of STSD is supported in the emergency services literature by research suggesting that even members of these professions not intimately involved in the on-site trauma, such as dispatchers, may exhibit posttraumatic symptoms (Weaver, 1987, in Mitchell & Dyregrov, 1993). Beaton et al. (1998) found that second only to *witnessing* a co-worker killed in the line of duty, *being aware of* a co-worker fatality was rated by the sample of firefighters and paramedics employed as the stressor that had the most traumatic impact. What is evident from this finding is that indirect exposure to traumatic stressors may exert a dramatic impact.

Figley (1995) explains that the greater an individual's empathy for a primary victim of trauma, the more likely an individual is to experience STSD. He proposes that emergency services personnel and other 'helping professionals' are inclined to have an increased capacity for empathising with the pain of others. It is this that draws them to their craft and it is this that equips them with a desire to relieve the suffering of others. This empathy, however, together with increased exposure to the trauma of others, is what places members of helping professions and critical occupations at great risk of developing STSD (Figley, 1995). It is apparent then that not only are ECPs and other emergency workers not exempt from developing PTSD, they may be even more at risk of developing symptoms than victims of other forms of trauma. They constantly risk direct exposure to potentially traumatic stressors, and their work with traumatised individuals places them at added risk of developing STSD.

4.8 Traumatic Stress in Critical Occupations in South Africa

A review of the research that has been conducted into PTSD among members of critical occupations in South Africa reveals symptom levels that are for the most part significantly higher than those reported in international studies. Kopel and Friedman's (1997) study into the prevalence of PTS symptoms in a sample of South African police officers reported that a shocking 49% of the sample was suffering from PTSD. Stromnes (1999) found that 40%, and Basedau (1999) reported that 22%, of their respective samples of police officers fulfilled

the criteria for PTSD. The differences in reported prevalence of PTSD across these studies may be a consequence of differing sample demographics and the use of different measures and cut-offs. Even the most conservative of these estimates, the 22% reported in Basedau's (1999) study, is considerably higher, however, than those reported in international studies. Carlier et al. (1997) found 7% of their sample of Dutch police officers, and Robinson et al. (1997) found 13% of their American sample, met the criteria for PTSD. These percentages are considerably lower than those reported in South African studies.

Viedge's (2001) study into the prevalence of PTSD in a sample of firefighters reported that 35% of the respondents were suffering from PTSD. Bryant and Harvey's (1996) American study reported that 17% of their sample of firefighters reported significant PTS and 9% reported extreme PTS. The results of Bryant and Harvey's (1996) research are not easily compared to those of Viedge's (2001) because different measures, different classifications and different cut-offs were employed in each case. The juxtaposition of these statistics should thus be treated speculatively as direct comparison is not possible. What the loose comparison demonstrates, however, is that the percentages reported for South African studies are considerably higher and that this cannot wholly be accounted for by different operationalisations and measurements.

Studies into the prevalence of PTSD in samples of South African ECPs have reported similarly high percentages. Georgiou and Ortlepp (1998) reported that, using the most conservative cut-offs available, 8% of their sample of ECPs fulfilled the criteria for PTSD and a substantially larger portion of their sample presented with symptoms not quite fulfilling the diagnostic criteria. Davidson (2001), using these same stringent cut-offs found a similar prevalence of 10% in her South African sample. Grevin (1996), in her study of American paramedics, does not report on the prevalence of PTSD per se, but does state that 20% of her sample of paramedics displayed *symptoms* of PTS. Mitchell and Bray (1990, in McCammon, 1996) estimate that the incidence of PTSD in the population of emergency services personnel is 4%, based on their American sample. Direct comparisons between ECP samples are hindered by the use of different terminology in this case, but a loose

comparison is possible. The reported prevalence of PTSD and symptoms of PTS appear to be higher in samples of South African ECPs than in their international counterparts.

In their exploration of traumatic stress among police officers, Carlier et al. (1997) categorize traumatic stressors encountered in critical occupations as either "violent" or "depressing". They define violent traumatic stressors as those incidents that involve active participation in events, and depressing traumatic stressors as those incidents involving confrontation with the consequences of events (Carlier et al., 1997). Carlier et al. propose that because police officers are exposed to both of these types of traumatic stressors, they are distinct from other critical occupations, which they argue, are confronted exclusively with depressing stressors. In South Africa, however, this is not the case. The levels of violence present in the South African context dictate that ECPs are regularly exposed not only to the consequences of traumatic events, they are themselves frequently actively involved in these events.

Sparrius' (1992) sample of ECPs reported being placed in physical danger as a significant stressor. They described routinely finding themselves in threatening situations and frequently receiving physical and verbal abuse from bystanders (Sparrius, 1992). The ECPs in Georgiou and Ortlepp's (1998) sample reported being assaulted by drunk patients and being shot at and held at gun-point as sources of significant stress. Davies' (2001) ECP respondents describe being involved in life threatening situations, being shot at and administering assistance to injured colleagues. Green's (1999) sample of ECPs reported dealing with abusive and aggressive patients, being threatened whilst trying to administer help, and being caught up in gang violence as stressors. Those ECPs employed for the present study who service the informal settlements reported that they routinely don bullet proof vests when responding to a call. These reports of routine exposure to violence do not appear in international studies – they are unique to the work of the South African ECP.

It is widely accepted that the psychological consequences of exposure to acts of human malevolence are more problematic than those associated with exposure to events perceived to be accidental or acts of God (Davidson et al., 1986; Figley, 1985; Janoff-Bulman, 1985). It stands to reason that the ECPs routine exposure to violence within the South African

context is likely to produce more problematic psychological sequelae than the routine stressors reported in international studies. In contrast to international studies which report on the consequences of exposure to discrete violent stressors, usually "rare" shooting incidents (Gersons, 1989, p. 248), the South African ECP is exposed to violence continuously. Studies have consistently shown that continuous exposure results in a more severe form of PTSD than exposure to a discrete stressor (Bryant & Harvey, 1996; Grevin, 1996; Newman et al., 1997). It is thus not surprising that the levels of PTSD reported in South African studies with critical occupations appear significantly higher than those reported in international studies.

4.9 McCammon's Framework for a Theory of Traumatic Stress Reactions in Critical Occupations

Paton and Smith (1996, p.20) argue that "there is no specific theory of work-trauma". In the absence of such a model, McCammon (1996) has combined elements of Murphy's (1991, in McCammon, 1996) organisational framework with Green et al.'s (1985) psychosocial model of trauma to construct a framework for understanding the variables that impact on the exposure-PTS relationship within critical occupations. She proposes that the variables involved fall into 4 categories, namely: event variables, individual variables, job and organisational variables, and mediating variables. McCammon (1996) contends that it is necessary to understand how all four factors interact to produce individual responses to traumatic exposure within critical occupations. Each of these categories of variables will be examined in the following section and the relevant research conducted within each category discussed.

4.9.1 Event Variables

There has been much interest in the literature regarding the nature of the traumatic stressors emergency services personnel are exposed to that may potentially result in PTSD (Beaton et al., 1998; Bryant & Harvey, 1996; McCammon, 1996; Paton & Smith, 1996). Studies have examined the consequences of disaster work (Armstrong et al., 1991; Dunning, 1990;

Dyregrov et al., 1996; Lundin & Bodegard, 1993; McCammon et al., 1988; McFarlane, 1989; Marmar et al., 1996; Paton, 1994; Schooler et al., 1999; Weiss et al., 1995), isolated shooting incidents (Carlier et al., 1997; Gersons, 1989; Manolias & Hyatt-Williams, 1993), and the routine tasks involved in these professions (Beaton et al., 1998; Bryant & Harvey, 1996; Genest et al., 1990). What studies such as these have sought to uncover is the key to understanding the frequency, type and severity of events that place these individuals at risk of developing PTSD. It is generally accepted that the development of PTSD depends greatly on individual appraisals and coping strategies (McCammon, 1996; McCammon et al., 1988; Paton & Smith, 1996), but certain events do appear to place emergency services personnel at greater risk than others.

Beaton et al. (1998) found that there were large variations in the ratings of the relative impact of the events examined, but a few stressors were consistently rated highly by the firefighters and paramedics in their study. The five stressors consistently rated as having the most impact were witnessing the death of a co-worker in the line of duty, being aware of, but not witness to, a co-worker fatality, experiencing a career-ending injury, rendering aid to a friend/ relative and working with a sudden infant death incident (Beaton et al., 1998). In Bryant and Murphy's (1996) study of firefighters, 75% of the sample reported that threats to their own or others' safety were the most stressful. The impact of threats to one's safety has consistently been reported as such in other studies too (Beaton et al., 1999; Bonifacio, 1991; Grigsby & McKnew, 1988; Sparrius, 1992). Other stressors frequently reported as having a traumatic impact are working with injured, abused or dead children (Beaton et al., 1998; Beaton et al., 1999; Georgiou & Ortlepp, 1998; McCammon, 1996; Mitchell & Dyregrov, 1993; Paton, 1994; Paton & Smith, 1996; Robinson et al., 1997), mass casualty incidents (Beaton et al., 1998; Beaton et al., 1999; Mitchell & Dyregrov, 1993) and working with victims with whom one can identify (McCammon, 1996; Paton & Smith, 1996).

Beaton et al. (1998) argue that little has been done to establish the relative importance of these events in the development of PTSD among emergency services personnel. They propose that further research is needed to isolate those events that place emergency services

personnel at risk, and emphasise the importance of focusing on those events commonly considered routine in these professions.

4.9.2 Individual Variables

The appraisal of an event as traumatic depends not only on the stimulus event, but on the way in which it is subjectively evaluated and pre-morbid factors such as demographic variables, personality traits, and personal history (McCammon et al., 1988). Weiss et al. (1995, p. 361) state that "much is known about the psychological processes that characterize those who have PTSD; considerably less is known about the risk factors for developing problems after exposure to traumatic stress". There has been some debate in the literature regarding whether members of critical occupations are better equipped to handle potentially traumatic events (McCammon, 1996). Authors have proposed that the members of critical occupations are hardier and more resilient than most (eg Dunning, 1985 in Moran & Britton, 1994; McFarlane, 1988 in McCammon, 1996). Authors such as Moran and Britton (1994) however, have argued that these personnel are no hardier than the general population, finding that their sample scored lower on hardiness than the scores previously reported for a sample of bus drivers.

Other authors have proposed that the personality styles of emergency services personnel may somehow impact on the subjective appraisals made among emergency services personnel. McFarlane (1989) found that neuroticism among firefighters was a trait significantly associated with symptoms of PTSD. Locus of control is another personality variable that may exert an influence on appraisal and coping. Weiss et al. (1995) found that an external locus of control was associated with symptoms of PTSD in their sample of emergency services personnel. Authors such as Paton and Smith (1996) and Robinson et al. (1997) propose quite the opposite: that symptoms of PTSD may be associated with an internal locus of control. Other individual variables reported to play a significant role in the exposure-PTS relationship are pre-trauma difficulties (McFarlane, 1989), sense of coherence (Kassen, 2002), and levels of empathy (Grevin, 1996).

Other individual variables that have come under investigation are race, age, marital status and gender. Pole et al. (2001) found that the Hispanic's in their sample of police officers consistently exhibited greater PTSD symptoms. McCammon (1996) reports that the variable of race has consistently emerged as non-significant in the literature, however. Robinson et al. (1997) found that age was a significant predictor of PTSD in their sample of police officers. The younger officers consistently reported greater levels of PTS (Robinson et al., 1997). Carlier et al. (1996) found no significant relationship between age and symptoms of PTSD, however. The research reports on the effects of marital status have been similarly inconclusive (Gibbs et al., 1993). Studies such as Maslach's (1976, in Gibbs et al., 1993) have found that single and divorced emergency workers report greater levels of PTSD compared to their married counterparts. Others such as Carlier et al.'s (1997) have reported no effect.

Gender differences have been widely reported in the traumatology literature. Women are reported to exhibit higher levels of PTSD symptomatology than their male counterparts (Wolfe & Kimerling, 1997). McCammon (1996) states that no consistent gender differences have emerged in samples of emergency services personnel. She points out, however, that the majority of these studies employ subjects who are predominantly male and statistical analyses are thus skewed (McCammon, 1996). Pole et al. (2001) found no gender differences in their sample of police officers. Carlier et al. (1997) found no evidence of gender differences in their study of police officers either. A later study by the same researchers (Gersons, Carlier, Lamberts & van der Kolk, 2000) found significant gender differences in reported symptoms. It is clear that the research on gender differences in reported symptom levels among emergency services personnel is inconclusive.

4.9.3 Job and Organisational Variables

The traumatic exposure encountered in critical occupations is unique in that it is work-related. McCammon (1996) proposes that because traumatic exposure within critical occupations occurs within a work context, it is difficult to separate the organisational stressors from the traumatic stressors. Work variables and individual variables clearly

interact closely within the exposure-PTS relationship. It is thus imperative when examining exposure in critical occupations to examine those organisational stressors and job characteristics that impact on the development of PTSD.

Certain authors have proposed that the training emergency services personnel receive protects them somewhat from the impact of potentially traumatic work-related events (eg Dyregrov et al., 1996). Others counter this with findings that training may in fact have an opposite effect, by affording emergency services personnel with rigid schemata that may not be adaptable to the range of potentially traumatic events that they encounter, and may in fact be detrimental to adjustment (Paton, 1994).

Authors such as Dyregrov et al. (1996), McCammon (1996) and Robinson et al. (1997) have proposed that more experienced emergency services personnel are better equipped to deal with potentially traumatic stressors. Other research has found no significant correlation between length of service and symptoms of PTSD (Beaton et al., 1999; Carlier et al., 1997, Weiss et al., 1995). And still other studies have found, inversely, that the more experienced personnel are at greater risk of developing PTSD (Moran & Britton, 1994). The role of length of service in the exposure-PTS relationship is clearly not yet fully understood. Moran and Britton (1994) and McCammon (1996) argue that a more important variable than length of service may be frequency of callouts. They propose that this is highly correlated with the number of distressing calls members of these professions are exposed to, and this impacts on the event variables discussed earlier (McCammon, 1996; Moran & Britton, 1994). There appears to be general agreement in the literature that, in accordance with McCammon's (1996) model, organisational variables play a significant role in the exposure-PTS relationship in critical occupations. There is still much contention, however, regarding which of these variables exert influence and in what manner.

4.9.4 Mediating Variables

The sequelae of traumatic exposure depend not only on the stimulus event, pre-morbid individual characteristics and organisational factors, but on mediating variables such as prior

expectations, appraisals, coping strategies, and the recovery context (McCammon, 1996). These variables are believed to intervene between the stimulus event and the resultant psychological outcome.

Paton (1994) has argued that expectations play a significant role in whether a potentially traumatic event may lead to posttraumatic sequelae. He proposes that those personnel with rigid expectations may be challenged in having to perform outside of those expectations on scene (Paton, 1994). These individuals may find it harder to accommodate the demands of the unexpected, whereas those better prepared for what they might encounter, or those anticipating the unexpected, may fare better and develop fewer symptoms (Paton, 1994). Paton (1994) also proposes that unrealistically high expectations of success may place individuals at risk in situations where success is limited.

McCammon et al. (1988) propose that appraisal and coping processes are important intervening variables in the relationship between exposure to a potentially traumatic event and the development of posttraumatic symptoms. They propose that an individual's subjective appraisal of the situation significantly impacts on the outcome (McCammon et al., 1988). Likewise, they argue that the particular coping processes employed mediate the exposure-PTS relationship (McCammon et al., 1988). Cognitive strategies for processing the potentially traumatic event, such as attempting to achieve a sense of mastery over the situation (McCammon et al., 1988) and creating meaning from the experience (Davies, 2001; McCammon et al., 1988) have been found to impact significantly on the outcome.

Authors have proposed that members of critical occupations may employ unique intrapsychic coping mechanisms to cope with ongoing exposure (Grevin, 1996). Mechanisms such as rationalisation (Davies, 2001; Palmer, 1983), repression (Grevin, 1996) and the use of humour (Davies, 2001; Moran & Britton, 1994; Palmer, 1983) have been explored. The defense mechanism to emerge the most consistently in studies of emergency services personnel is denial. There is much contention in the literature as to whether denial is an adaptive or maladaptive coping strategy, and regarding the manner in which it impacts on the exposure-PTS relationship. Grevin (1996) proposes that denial is an adaptive coping

strategy among emergency services personnel. She found a negative correlation between denial and symptoms in her sample of paramedics and argues that these practitioners may need to distort affect and information to avoid developing PTSD (Grevin, 1996). Other authors such as Beaton et al. (1998), Genest et al. (1990), Manolias and Hyatt-Williams (1993) and McFarlane (1989) argue that emergency services practitioners' use of denial is maladaptive and positively correlated with symptoms of PTSD. Everstine and Everstine (1993) propose that although denial may serve to ward off painful affect and allow members of critical occupations to perform their job, thus proving adaptive at work, it may be strongly maladaptive in other spheres of their lives.

Paton and Stephens (1996) propose that emotional disclosure plays a pivotal role in emotional processing and argue that denial thus interferes with the processing of a traumatic event. Much has been written about the culture of non-disclosure of emotions and the "cowboys don't cry" ethos in critical occupations (see Davies, 2001; Green, 1999; Gersons, 1989; Kopel & Friedman, 1997; Paton & Stephens, 1996). It is thus not surprising, given this climate of non-disclosure, where it is perceived as a sign of weakness to entertain emotions, that denial should be a dominant defense mechanism (Paton & Smith, 1996).

Investigations into the impact of denial on the exposure-PTS relationship present a clear illustration of how individual, organisational and mediating variables interact within critical occupations. The propensity towards utilising denial may be an individual characteristic, but the organisational culture that dictates that the expression of emotion is a sign of weakness is an organisational variable, and the utilisation of this defense post-exposure may mediate the impact of that exposure. The three may interact to produce the propensity observed in the literature for emergency services personnel to employ this defense. It is clear that an understanding of the exposure-PTS relationship in critical occupations benefits from a unique understanding of event, individual, organisational and mediating factors.

The nature of an individual's recovery context can impact significantly on the outcome of traumatic exposure (Paton & Smith, 1996). Various studies have been conducted exploring the efficacy of debriefing for example (Armstrong et al., 1991; Robinson et al., 1997;

Stratton et al., 1984). Social support following a potentially traumatic event is another variable that has received a great deal of attention as a variable that may impact significantly on the exposure-PTS relationship in critical occupations. This particular mediating variable, being a focus of the present study, will be examined in the following section.

4.10 Social Support in Critical Occupations

The manner in which social support is defined and operationalised has been inconsistent in the research examining its role in the exposure-PTS relationship (see chapter 3). The research into the role of social support within critical occupations is no exception to this rule. There is a body of literature to suggest that social support is a protective factor against the development of PTSD in these professions. Gibbs et al. (1993, p.203) argue that "(s)ocial support can ameliorate the stressful effects of emergency interventions on workers". Paton and Smith (1996, p. 39) propose that "(s)ocial support has been implicated as a particularly effective element of coping" in critical occupations. Weiss et al. (1995, p.361) state that social support has been "promising in predicting who will experience problems after exposure to traumatic stressors". Not all of the research in the field has supported these contentions, however.

In spite of the widely accepted assumption that social support is beneficial in critical occupations, little empirical research has been conducted to rigourously investigate this assumption (Paton & Stephens, 1996). To complicate matters further, the research that has been conducted has produced inconsistent findings. Carlier et al. (1997) found that high scores on the measure of perceived social support employed predicted fewer symptoms of PTSD in their sample of police officers. In their study of police officers, firefighters and ECPs, Weiss et al. (1996) found that perceived support predicted fewer symptoms of PTSD. McCammon et al. (1988), employing a measure of received social support, reached the same conclusion.

Beaton et al. (1999), in their exploration of the coping strategies employed by emergency services personnel, however, found that the seeking out of social support was not

significantly correlated with symptoms of PTSD. Kaufmann and Beehr's (1989) study of social support among police officers, although examining its relationship to organisational, rather than traumatic stress, produced noteworthy results. They utilised a measure of perceived support, examining a range of different modes, and found a mixed profile of main effects and a reverse buffering effect (Kaufmann & Beehr, 1989). Practical support was found to exhibit a reverse buffering effect, while certain of the emotional and practical assistance support indices exhibited main effects in the expected direction (ie negatively correlated with symptoms) (Kaufmann & Beehr, 1989). What Kaufmann and Beehr's (1989) study so beautifully illustrates is Cohen and Wills' (1985) and Vaux et al.'s (1987) contention that social support is a multifaceted construct and that the measurement of these different facets produces quite disparate results. Kaufmann and Beehr's (1989) research demonstrates that a lack of appreciation for the facets subsumed under the umbrella term "social support" is likely to result in erroneous results and a case of comparing "apples and pears" whilst purporting to compare "apples and apples".

Paton and Stephens (1996) echo the contention of social support theorists such as Cohen and Wills (1995) and Vaux et al. (1987) by proposing that different modes of support may play differing roles in the stressor-strain relationship. They propose that the relationship between these modes and the development of symptoms of PTSD within emergency services personnel may take on a unique presentation. Paton and Stephens (1996) propose that emotional support has been shown to be central to the recovery process, and add that support in the form of information/advice may be very important to normalise the PTSD response. It is important, however, to consider the "macho" organisational culture, in which the expression of emotion may be perceived as a show of weakness, as a potential deterrent to the seeking out and acceptance of emotional support.

None of the studies cited above as having found social support to have a beneficial effect within the exposure-PTS relationship qualify what modes of support have been assessed or the exact nature of the constructs being assessed by the instruments employed. Studies such as Weiss et al.'s (1996), which employed a 10-item scale, clearly lack sensitivity for the multi-faceted nature of the construct. Kaufmann and Beehr's (1989) study serves as a

dramatic illustration that this lack of definition is likely to confound findings and produce contradictory results.

Few South African studies have examined social support in critical occupations. A study by Allen and Ortlepp (1998) into PTSD among security personnel found that colleague and supervisor support was negatively correlated with symptoms. Basedau (1999), employing Vaux's (1982, in Vaux, Phillips et al., 1986) Social Support Appraisals scale with a sample of police officers, found social support to be negatively correlated with symptoms of PTSD. The study confirmed the main effect hypothesis, but failed to produce any evidence for the buffering hypothesis. Stromnes' (1999) study of police officers produced counterintuitive results. She found no significant relationship between social support and symptoms of PTSD. The different measures used in each of these studies may account for the different results.

Authors have proposed that there are certain characteristics unique to emergency services personnel which distinguish the role of social support in this context from its role elsewhere. The members of critical occupations, and ECPs in particular, are cited in the literature reporting a sense of alienation from traditional support structures because of a belief that others "just don't understand" the sorts of things that they are exposed to on a daily basis (Davies, 2001; Everstine & Everstine, 1993).

Authors such as Everstine and Everstine (1993) and Paton and Smith (1996) propose that a macho culture and the utilisation of denial characteristic of emergency services personnel, may inhibit the seeking out of support. They propose that the organisational culture equates the expression of emotion with personal weakness (Everstine & Everstine, 1993; Paton & Smith, 1996). Research has shown that emotional disclosure following a traumatic incident is helpful in processing it and is related to fewer symptoms (Carlier et al., 1997; Paton & Stephens, 1996). McFarlane (1988, in McCammon, 1996) found that the firefighters exhibiting the most symptoms in his sample tended to shun debriefings and support from colleagues. Manolias and Hyatt-Williams (1993) found that many of their sample of police officers rejected the comfort offered by others in favour of working through their problems

on their own. Within a culture that appears to subsume specific attitudes towards accessing support, it is of particular interest to examine how these attitudes impact within the exposure-PTS relationship. The availability of support may be less important than the attitudes that may prevent it from being utilised.

Those particular defense mechanisms characteristic of emergency services personnel, such as denial (Everstine & Everstine, 1993; Paton & Smith, 1996) and humour (Davies, 2001; Moran & Britton, 1994; Palmer, 1983) may jeopardise these individuals' capacity to provide support to others. Paton and Smith (1996) contend that the emergency worker blind to his own traumatic reaction is unlikely to perceive it in his/her colleagues, or be emotionally available if he/she does. Manolias and Hyatt-Williams (1993) propose that within this context the provision of support may in fact be detrimental. They contend that it is plausible that colleagues may prove to be an additional source of stress in possibly misguided attempts to help, by making jokes about the incident for example (Manolias & Hyatt-Williams, 1993). This suggests that it is important to investigate the quality of the support provided and places emphasis on the importance of subjective appraisals or perceived support as opposed to the mere objective presence of support.

Another important characteristic specific to critical occupations is the continuous nature of their exposure. Research into the impact of social support within the exposure-PTS relationship among emergency services personnel has tended to examine, retrospectively, the effect of social support after exposure to discrete, traumatic incidents (McCammon et al., 1988; Weiss et al., 1995). The present study endeavoured to examine the effect of social support within a sample of ECPs exposed to current continuous traumatic stress. It is quite possible that social support has a different effect in the face of continuous exposure, to that in response to a single, discrete stressor. Intuitively one might propose that the effect of social support would only be evidenced in the case of acute, rather than chronic stressors, because we understand social support to be a predictor of post-trauma recovery. Cohen and Wills (1985) argue, however, that the available data suggests that social support does have a buffering effect in the face of chronic strain. The present research aimed at exploring this

contention, by observing in what manner, among South African ECPs exposed to continuous traumatic stress, social support impacts on the exposure-PTS relationship.

Also reported, specifically in South African studies (eg Green, 1999; Sparrius, 1992), is a perception among ECPs that a low occupational status is afforded them and consequently support is not readily offered by their communities or families. Sparrius (1992) found that many ECPs felt that they were treated by the public as a "glorified taxi-service" and reported that these ECPs are frequently verbally abused by a public whom they perceive as lacking respect for them. In accordance with Green et al.'s (1985) description of the recovery environment in their psychosocial model, this lack of community and societal support may place them at increased risk. Support may not be readily available to South African ECPs as a consequence of public perceptions and may not be accessed as a consequence of ECPs beliefs about its lack of availability. It is clear that many factors may come to bear on the provision, perception and receipt of social support within this unique population. It is thus of particular interest to examine perceptions of available support, a more objective measure of actual support received, and the specific attitudes towards accessing that support evident, to better understand their relative roles within the exposure-PTS relationship.

4.11 Conclusion

This chapter has served to elucidate the nature of the work of ECPs, particularly within the South African context. It has aimed at defining the terminology employed and at contextualising the present research within the critical occupation literature. An investigation of the nature of the stressors, traumatic and organisational, the job entails has been provided and the relevant literature, both South African and international, has been reviewed. McCammon's framework for understanding the variables impacting on the exposure-PTS relationship was presented, and the relevant research conducted in this area examined and reported within this framework. There is growing interest in South Africa in examining the nature of traumatic stress in critical occupations. PTS is clearly rife among

ECPs and allied critical occupations, particularly in a violent context with an astonishing rate of road accidents.

Research into the particular variables that may protect or place individuals at risk of developing PTSD following potentially traumatic exposure is of paramount importance. The present study sought to investigate one of these variables in depth. Very few South African studies have examined the role of social support within the exposure-PTS relationship and those that have have utilised disparate conceptualisations and measures. This chapter has served to argue that social support in critical occupations, and among ECPs in particular may, for a number of reasons, be particularly elusive or under-utilised. The present research aimed at investigating the implications of this, by examining the relative importance of social support in the exposure-PTS relationship. It is clear from the contradictory findings reported both locally and internationally that a tighter definition of social support and its various facets is required for conceptual and methodological clarification.

This chapter has served to bring together the concepts of PTS and social support explored in the two previous chapters, and to examine how each manifests and impacts within critical occupations, particularly among South African ECPs. The discussion now turns in the following chapter to the method employed for the present study.

CHAPTER 5: METHOD

5.1 Rationale

The present study served to address an area where a great deal of attention is due, and one which has only recently been acknowledged as an area of concern – namely, the way in which continuous exposure to traumata impacts on the South African ECP. ECPs are exposed to many traumatic stressors which resemble closely those experienced in combat by soldiers (Grevin, 1996). The stressors the South African ECP is required to confront on a daily basis include rendering aid to mutilated victims of homicide, witnessing often multiple deaths, assisting children who have been injured, risking exposure to HIV/Aids and being exposed to hazardous chemicals and environments (Davidson, 2001; Georgiou & Ortlepp, 1998; Green, 1999). Unlike their military counterparts, however, ECPs have been relatively neglected in trauma research (Mitchell & Dyregrov, 1993). The present study sought to address this neglect by exploring what types of traumata these ECPs are exposed to and the relative impact these have on them. In this way, the study sought to investigate both the presence of symptoms of PTS in the sample, as well as the traumata which appear to pose the greatest threat to these ECPs' mental health.

There is much contention around the way in which social support impacts within the exposure-PTS relationship (Flannery, 1990). Contradictory findings have emerged, with some South African studies demonstrating an inverse association between social support and PTS symptomatology (Allen & Ortlepp, 1998) and others a positive correlation (Esprey, 1996). South African studies have tended to evidence main effects (Allen & Ortlepp, 1998; Esprey, 1996), but a body of international research has evidenced buffering effects (Flannery & Weiman, 1989 in Flannery, 1990). Other studies, both local (Stromnes, 1999) and international (Green & Berlin, 1987; Navia & Ossa, 2003; Weiss et al., 1995) have found a complete want of evidence for either effect. These contradictory findings may be accounted for by the different conceptualisations of social support operationalised in each case (Esprey, 1996; Vaux, 1987). The present study aims at elucidating the complex phenomenon of social support, by examining three distinct conceptualisations.

Due to the paucity of research into the phenomenon of continuous PTS, an unanswered question remains as to how social support does in fact impact within the relationship between continuous exposure to traumatic stressors, and the development of PTS symptoms, if at all. The proposed research seeks to explore the relative impact of each facet of social support on the exposure-PTS relationship in a context of continuous traumatic stress.

5.2 Aim

The purpose of the present study was to explore PTS and social support among ECPs. It aimed at examining what types of traumata ECPs are exposed to, and the relative impact these traumatic experiences have on them. It undertook to examine the relationship between exposure to traumata and the development of symptoms of PTS. The study further aimed at exploring what role social support plays in the relationship between exposure to traumatic events and the development of PTS symptoms, and testing both the buffering and main effect hypotheses. It served to explore three facets of social support defined by Vaux (1982, in Vaux, Phillips et al., 1986), namely the perceived appraisal of support, the perceived receipt of supportive behaviours and an individual's orientation towards utilizing support resources. It aimed at examining the relationship between each facet and the role each plays in the exposure-PTS relationship.

5.3 Research Questions

1. What sorts of traumatic events have subjects in the sample been exposed to, and what degree of positive or negative impact are these events rated as having had?

2. What percentage of the sample is exhibiting symptoms of PTSD?

3. Is there a relationship between exposure to traumatic events and PTS symptoms?

4. What is the relationship between the three dimensions of social support?

5.1 Is there a main effect (direct correlation) between social support and symptoms of PTS?

5.2 If so, what is the relative impact of each of the dimensions of social support measured by Vaux's (1982, in Vaux, Phillips et al., 1986) three scales?

6.1 Does social support act as a buffer in the relationship between exposure to traumatic events and development of PTS symptoms?

6.2 If so, what is the relative impact of each of the dimensions of social support measured by Vaux's (1982, in Vaux, Phillips, et al., 1986) three scales?

7. What is the impact of each of the modes of support measured by Vaux's (1982, in Vaux et al., 1987) SS-B within the exposure-PTS relationship?

8. In what manner does support from different sources, measured by the SS-A (Vaux, 1982, in Vaux, Phillips et al., 1986) and the SS-B (Vaux 1982, in Vaux et al., 1987), impact within the exposure-PTS relationship?

5.4 Sample

A non-probability, convenience sample of 107 ECPs was drawn from 13 Netcare 911 stations within the Gauteng region. This sample size was obtained in view of the requirements for the data analyses proposed. A total of 199 questionnaires were distributed and a response rate of 54% was evidenced. The sample consisted of 74 males, 29 females and 4 unspecified. 49 Basic Ambulance Assistants (BAA's), 34 Ambulance Emergency Assistants (AEA's) and 15 Paramedics participated, with 9 unspecified. The sample comprised 61 subjects between 18 and 30 years old, 33 between 31 and 40 years old, 7 between 41 and 50 years old and 6 unspecified. Of the subjects, 36 reported being single, 30 married, 19 living together, 11 divorced, 1 separated and 10 unspecified. A total of 21

subjects reported having received counselling by a psychologist, trained counsellor or pastor, 80 subjects reported never having received counselling, and 6 subjects failed to specify whether they had received counselling or not. Experience in the paramedical field ranged from under 1 year to 25 years. English was reported to be the first language of 61 subjects, 28 reported Afrikaans, 4 Zulu, 2 Sotho and 12 unspecified. Of the respondents, 10 (63% of station population) worked at Linksfield station, 9 (30%) at Sunninghill/Midrand, 8 (30%) at Olivedale, 8 (89%) at Benoni, 10 (95%) at Kempton Park, 20 (67%) at Milpark/Garden City, 15 (60%) at Union/Mulbarton, 12 (75%) at Roodepoort, 5 (63%) at Krugersdorp and 10 (37%) at Germiston/Boksburg.

5.5 Measuring Instruments

The measuring instruments described below were combined to form the questionnaire (see appendix I), which was administered in English. Time constraints and the number of languages represented in the sample did not permit the translation of the questionnaire.

5.5.1 Biographical Data

This section was constructed by the researcher to obtain information on the demographic constitution of the sample with respect to gender, home language, age, marital status, length of service and previous experience of counselling.

5.5.2 Social Support Appraisals Scale (SS-A)

The SS-A was designed by Vaux (1982, in Vaux, Phillips et al., 1986) to assess an individual's subjective appraisal of being supported. It consists of three sub-scales, which assess perceived support from family, friends and others, and 23 statements with which the respondent is required to either strongly agree, agree, disagree, or strongly disagree. The SS-A has been shown to be an extremely reliable and valid instrument for use with student and community samples (Vaux, Phillips et al., 1986), as well as samples of psychiatric

inpatients (O'Reilly, 1995), the elderly (Monahan & Hooker, 1997) and police officers (Basedau, 1999).

Vaux, Phillips et al. (1986) report high internal consistency scores, and O'Reilly's (1995) findings testify to the scale's construct validity. O'Reilly (1995, p.41) also concludes that the SS-A "is a highly reliable instrument". The researcher found an impressive cronbach alpha of .91 in an earlier study with police officers (Basedau, 1999). Both Vaux, Phillips et al. (1986) and O'Reilly (1995) conducted investigations into the scale's convergent validity, by correlating the scale with various other measures of perceived social support, and both studies conclude that the convergent validity of the SS-A is high. This evidence, together with Vaux, Phillips et al.'s (1986, p.216) contention that the SS-A is practical and that "respondents appear interested and motivated, and missing data are rare", recommended the SS-A for the present study.

5.5.3 Social Support Behaviours Scale (SS-B)

The SS-B is a measure of social support that taps into an individual's subjective appraisal of available supportive behaviours (Vaux, 1982, in Vaux et al., 1987). The scale yields two scores, one for available support from family, and one for available support from friends. It asks subjects to indicate how likely (based on previous experience) a family member or friend would be to perform each behaviour. The scale consists of 5 subscales, each describing a different mode of support, namely: emotional support, socialising, practical assistance, financial assistance, and advice/guidance. It is a measure of perceived social support in that it taps into the subject's appraisal of available supportive behaviours, rather than a more objective account of their actual enactment. It consists of 45 items, which are answered in a likert format. The SS-B has been shown to have "excellent internal consistency" and has proven both reliable and valid across studies (Vaux et al., 1987, p. 227).

5.5.4 Network Orientation Scale (NOS)

The NOS is a measure of negative network orientation – the belief that it is risky, useless or inadvisable to seek help from others (Vaux, 1985). The scale consists of 20 items, answered in a likert format. Vaux, Phillips et al. (1986, p. 206) state that "it has shown excellent internal consistency, good stability, and adequate convergent validity with respect to measures of social support and personality". The NOS has been shown to be a reliable instrument across an array of populations, including students (Vaux, Phillips et al., 1986), children (Belle, Dill & Burr, 1991) and survivors of childhood sexual abuse (Lam & Grossman, 1997). The fact that it is easily administered and easily scored also recommended it for use in the present study. The scale was scored in such a manner in the present study so that high scores indicate a positive network orientation.

5.5.5 Revised Paramedic Work Exposure Checklist (RPWEC)

The Paramedic Work Exposure Checklist (PWEC) is a new instrument devised by Davidson (2001) to measure the frequency of exposure to events that are both specific to the work of an ECP and potentially traumatic. The PWEC was developed from Beaton et al.'s (1998) Incident Stressor Measure (IS) and Esprey's (1996) Dimensions of Trauma Scale (DTS), a South African scale, to account specifically for the experiences South African ECPs are exposed to. Both of these instruments have been shown to be reliable and valid (Beaton et al., 1998; Esprey, 1996). The Cronbach alpha co-efficient reported for the PWEC is .97, suggesting that the scale demonstrates impressive internal reliability (Davidson, 2001, unpublished data).

The IS is a checklist of work-related stressors which the respondent is required to rate according to the severity of stress each produced (Beaton et al., 1998). The DTS provides a useful measure of the type of traumatic events the respondent has been exposed to, the number of different traumatic events the respondent has experienced, and the respondent's subjective appraisal of the impact of those events (Esprey, 1996). It has been shown to

demonstrate satisfactory internal consistency, inter-item consistency, and criterion validity (Esprey, 1996).

The PWEC is a checklist of stressors which the respondent is required to rate according to their frequency of occurrence. Although useful in its present format, the PWEC lacks the sensitivity of the DTS, where the DTS lacks specificity to the ECP population. Beaton et al. (1998) found that appraisals of the stressfulness of various items on the IS varied greatly between subjects. They argue that this appraisal is independent of the frequency of occurrence (Beaton et al., 1998). Research has consistently shown, in accordance with Green et al.'s (1995) psychosocial model, that it is the appraisal of a stressor as traumatic that is most strongly correlated with symptoms of PTSD, and not merely the presence of a potentially traumatic event (Janoff-Bulman, 1985; McCammon, 1996; Paton & Smith, 1996). The PWEC was thus revised by the researcher to keep the specificity of the items, but with the appraisal sensitivity of the DTS format. It thus measures the subjective impact of each incident to which the subject has been exposed. This score will provide a more accurate indication of the incidence of traumatic exposure within the sample.

It is also important, according to Paton and Smith (1996), not to assume that potentially traumatic stressors necessarily have a negative impact on the individual. They argue that it is imperative that positive outcomes are also accounted for, as emergency services personnel often report beneficial effects of exposure (such as offering a challenge, providing an appreciation for life etc) (Paton & Smith, 1996). The likert format of the DTS accommodates just this eventuality by allowing for ratings of positive impact. Another feature of the DTS that has been added to the PWEC is an open-ended section requesting respondents to fill in any additional traumata that they feel have not been included in the scale. This section is not included in the scoring of the scale, but instead provides qualitative data.

Although no pilot study was conducted for this revision, it is assumed that, based on the fact that the PWEC has demonstrated good internal reliability, that it developed out of the DTS and IS (which have both consistently been shown to be valid and reliable instruments), and

that the scale evidences content and face validity, the instrument is a valid measure of ECP exposure.

5.5.6 Revised Impact of Event Scale (RIES)

The original Impact of Event Scale (Horowitz et al., 1979) is a 15 item Likert Scale designed to measure the two core symptom clusters of PTSD, namely intrusion and avoidance. Each item comprises a statement describing a characteristic symptom of PTSD, to which the respondent answers by rating how often the specific symptom described has occurred in the last seven days. The IES has been described as "the gold standard self-report measure in trauma research" (Joseph, 2000, p.108). It has been used as a measure of PTSD in numerous studies with an array of different populations such as Vietnam veterans (Deahl, Gillham, Thomas, Searle & Srinivasan, 1994; Green & Berlin, 1987; Hyer, et al., 1994), survivors of disaster (Joseph et al., 1993; Joseph et al., 1995) and survivors of childhood leukemia and their parents (Kazak et al., 1997).

Weiss (2004, p.170) proposes that the IES "has been the most widely used self-report measure of stress response or PTSD symptoms". It has been translated into a number of different languages, including German (Schutzwohl & Maercker, 1999) and French (Birmes et al., 2000). It has also been employed extensively in studies within critical occupations, measuring PTS among firefighters (Beaton et al., 1999; Bryant & Harvey, 1996; McFarlane, 1989; Paton, 1994); police officers (Kopel & Friedman, 1997; Robinson et al., 1997); ECPs (Beaton et al., 1998) and disaster workers (Dyregrov et al., 1996; Lundin & Bodegard, 1993; Schooler, Dougall & Baum, 1999). Many reports testifying to its reliability and validity exist, including Kopel and Friedman's (1997) study on South African police officers. Paton and Smith (1996) report that it is a particularly appropriate measure of work-related trauma. Both the Avoidance and Intrusion sub-scales have been shown to demonstrate high internal consistency and good test-retest reliability (Horowitz et al., 1979). Zilberg, Weiss and Horowitz (1982, p.413) offer further support for the IES by proposing that the instrument demonstrates good temporal validity, and possesses "highly relevant item content".

The IES has subsequently been revised by Esprey (1996), a South African researcher, to account for the third crucial PTS cluster - that of increased arousal. This relatively recent revision was conducted to parallel more closely the DSM-IV criteria for PTSD. What has been added to the scale is a third sub-scale, the Increased Arousal sub-scale. The RIES consists of 21 items and arguably assesses a broader range of PTS symptoms. A recent revision of the IES by the original researchers does exist (IES-R, Weiss & Marmar, 1997). Because the items that have been added to both the RIES and the IES-R are rewordings of the DSM-IV criteria, they are almost identical. The RIES has been chosen for use in the present study because it was piloted, validated and utilised by subsequent researchers (Allen & Ortlepp, 1998; Basedau, 1999; Georgiou & Ortlepp, 1998; Naidoo, 2000) in the South African context. The researcher found the RIES to exhibit a cronbach alpha of .97 in an earlier study, suggesting that the scale has impressive internal reliability (Basedau, 1999)

Although Horowitz et al. (1979) did not specify PTSD cut-offs for the original IES, and in fact do not recommend its use for diagnostic purposes, the IES has been widely employed as a diagnostic instrument (Joseph, 2000). Paton and Smith (1996, p.37) describe the IES as a "sensitive instrument" for the measurement of work-related trauma. It is particularly sensitive, according to Joseph (2000), when used as a continuous measure rather than as a means to classify "PTSD" and "non-PTSD" groups. Neal, Busuttil, Rollins, Herepath, Strike and Turnbull (1994, p.455) argue, however, that the optimum IES cut-off discerned in their statistical study, "had significantly greater accuracy as a dichotomous measure of PTSD than the optimum cut-off score of the MMPI-PTSD Subscale".

More baffling than the debate regarding the use of the IES as a diagnostic measure is the adherence to seemingly arbitrary cut-offs evident across studies. It is widely acknowledged in the literature that Horowitz et al. (1979) did not stipulate cut-offs for their scale. Many researchers have proposed their own cut-offs based on a variety of different substantiations, which has resulted in vast discrepancies. Cut-offs used in the literature range from a total scale score of 19 (Bryant & Harvey, 1996) to 51 (Birmes et al., 2000). The difference between these cut-offs, purporting to evidence the same phenomenon, is alarming. This

difference cannot but cast doubt on the general validity of the reported incidence of PTSD within samples.

Many South African studies have elected to employ the means reported in Horowitz et al.'s (1979) validation studies as cut-offs (Davidson, 2001; Esprey, 1996; Georgiou & Ortlepp, 1998; Kopel & Friedman, 1997; Viedge, 2001). Although reporting this to be the origin of the cut-offs employed, these cut-offs range from employing a total scale score of 25 (Kopel & Friedman, 1997; Viedge, 2001) to requiring a combination of 18.2 and 21.4 on the Intrusion and Avoidance subscales respectively (Davidson, 2001; Esprey, 1996; Georgiou & Ortlepp, 1998). There is clearly a vast discrepancy between these cut-offs, which makes comparison across studies a hazardous exercise.

Neal et al. (1994) examined the psychometric properties of the IES for use as a diagnostic measure of PTSD. Of the three PTSD measures examined in their study, Neal et al. (1994, p. 447) found the IES to be "the most useful dichotomous measure". They statistically discerned the optimal cut-off, producing the highest positive predictive rate, and the lowest misclassification rate, to be a total scale score of 35. This statistically substantiated cut-off is to be employed in the present study. An examination of the discrepant PTSD percentages, utilising the various cut-offs employed in the literature, will be offered for the sake of comparison. No cut-offs have yet been proposed or statistically discerned for the added Increased Arousal subscale. The identification of subjects exhibiting clinically significant symptoms of PTS in the present sample is thus restricted to their scores on the Intrusion and Avoidance subscales.

The Cronbach alpha co-efficients computed by Esprey (1996) were 0,83 for the intrusion sub-scale, 0,67 for the avoidance sub-scale, and 0,69 for the Increased Arousal sub-scale, and it is clear that the instrument demonstrates good internal consistency. A number of recent South African studies with ECPs (Georgiou & Ortlepp, 1998), police (Basedau, 1999; Naidoo, 2000) and security personnel (Allen & Ortlepp, 1998) have employed the RIES. It is generally considered to be a valid and reliable instrument for use in the South African context, particularly with emergency services personnel.

It is important at this juncture to acknowledge the debate regarding the specificity of the focal or index trauma identified when assessing symptoms of PTSD. Weiss (2004, p.180) states that the IES and its revisions were "designed and validated using a specific traumatic event as the reference". Weiss (2004) acknowledges, however, that it is as yet unclear whether the referent may be broadened from a specific event to a specific class of events. Norris and Hamblen (2004) propose that a common mistake in assessing traumatic exposure is an attempt to incorporate a multitude of experiences into a single "catch-all" event. They argue that what is most important is that exposure measures "focus more specifically on a clearly defined population of events" (Norris & Hamblen, 2004, p.75). The RPWEC does just this, by focusing on a class of potentially traumatic events specific to the work of an ECP. It was chosen for the present study over more generic stress and PTS inventories to achieve an optimal specificity without being too narrow. Acknowledgement of Weiss' (2004) argument opens up a debate as to whether the events classed together in the RPWEC form too vague a referent for the RIES or not. The present research assumes the position that, given the continuous nature of the exposure and the number of potentially traumatic events ECPs are regularly exposed to, isolating a discrete referent would be both arbitrary and reductionistic. In light of both the nature of the exposure being assessed, and the specificity of the RPWEC to a designated class of events, the present study holds that the RPWEC is an appropriate referent for the RIES.

5.6 Research Procedure

The researcher obtained permission from the Netcare 911 East and West Gauteng regional managers to conduct the research. The researcher then met with the operations managers at each of the bases, explained the purpose of the research and received permission to approach their crews. The personnel at each base were approached by the researcher at shift change-over, allowing for the researcher to address approximately 4-12 people at one time, depending on the size of the shifts at the various stations. The researcher explained the purpose of the research, and requested participation, stressing that this was entirely voluntary and that if they chose to participate their completed questionnaire would be kept confidential. In addition, the researcher provided her phone number on the cover sheet of the

questionnaire and emphasised that should anyone feel the need to speak to a counsellor about any of the issues raised in the questionnaire, they should contact her. Each questionnaire (see appendix I) was handed out with an envelope. A portion of the sample elected to fill out questionnaires there and then, while others elected to take a questionnaire with them, seal it in the envelope and hand it back for collection. The researcher personally collected all sealed envelopes from the operations managers at each station, thus ensuring confidentiality. A total of 199 ECPs were addressed at 13 stations in the East and West Gauteng region. 3 ECPs expressed that they would like counselling. 2 were referred to private psychologists, and 1 to the Centre for the Study of Violence and Reconciliation Trauma Clinic.

5.7 Research Design

The present study is quantitative and cross-sectional in nature. The trauma literature examining social support suggests that the relationship between social support and exposure (Taft et al., 1999), and between social support and symptoms of PTS (McDonald et al., 1999), is reciprocal in nature. There is even skepticism regarding what may intuitively appear to be a logical causal link between exposure and symptoms of PTS. Freud (1920), for example, proposed the repetition compulsion and the idea that traumatised individuals may unconsciously invite re-traumatisation. Authors such as Gibbs (1989) have argued that PTSD symptoms may place an individual at increased risk of subsequent exposure to trauma. There is thus reason to believe that the exposure-PTS relationship may also be reciprocal in nature. The present study thus makes no causal claims. It has sought to investigate correlations between the variables under investigation.

5.8 Data Analysis

5.8.1 Descriptive Statistics

Simple statistics were computed to describe the variables under investigation with regards to ranges, means and standard deviations.

5.8.2 Internal Reliability Analyses

Cronbach alphas were computed to give an indication of the internal reliability of the scales used in the present study. The alpha co-efficient gives an indication of the consistency of responses to the items of the scale, and serves as an indication of test reliability (Rosenthal & Rosnow, 1991). The calculated coefficients will be compared to those reported in the literature for each scale. What can be observed then is whether the scales, when used with a South African sample, yield similar internal consistency scores to those cited in overseas studies.

5.8.3 ANOVA and 't'-Tests

ANOVA and 't'-tests were employed to test the significance of differences within the sample. These tests were conducted to distinguish the scale scores on the basis of biographical variables, namely: gender, marital status, age, position, counselling and station.

5.8.4 Correlations

Pearson correlations were computed to investigate the presence, direction, strength and significance of the relationships between the variables under investigation. This analysis was used to answer certain pivotal research questions. Correlations were employed to investigate:

1. The presence, direction, strength and significance of a relationship between the RPWEC and the RIES.
2. The presence, direction, strength and significance of a relationship between each of the SS-A, the SS-B and the NOS with the RIES (i.e. the main effect hypothesis).
3. The presence, direction, strength and significance of a relationship between each of the SS-A, the SS-B and the NOS with the RPWEC.
4. The presence, direction, strength and significance of relationships between the SS-A, the SS-B and the NOS.

5. The presence, direction, strength and significance of the relationships between the biographical variable 'length of service' and the RIES and RPWEC respectively.

5.8.5 Partial Correlations

The SS-A, the SS-B and the NOS were partialled out of the relationship between the RPWEC and the RIES to observe a possible buffering effect. These scales were partialled out one at a time and in combination in a series of first and second order partial correlations. The partial correlations were then compared to the original correlation observed between the RPWEC and the RIES and the difference between these correlation co-efficients was tested for significance. In this manner the buffering hypothesis was tested.

5.8.6 Multiple Regression

Employing the RIES as the criterion variable, and the RPWEC, the SS-A, the SS-BF, the SS-BFR and the NOS as predictor variables, a backwards stepwise regression was conducted. This was done to observe the relative strength of each of these variables to predict symptoms of PTS. The backwards stepwise method was employed because, based on the literature suggesting that the social support measures are highly correlated with one another (Vaux, Phillips et al., 1986), there was sufficient reason to assume multi-collinearity. The backwards stepwise regression is considered the best method, when multicollinearity is present, to eliminate potential confounds (Kleinbaum, Kupper, Muller & Nizam, 1998). A separate multiple regression model was run to explore the contribution of each of the social support subscales in predicting variance on the RIES. In addition, separate multiple regression models were run for gender, counselling and high and low exposure groups to observe differences in the relationships between the variables between groups.

5.9 Ethical Considerations

Due to the sensitive nature of the study and the issues addressed in the questionnaire, certain ethical considerations demanded attention. The researcher emphasised the voluntary nature

of participation and was careful not to imply any organisational expectation that the questionnaire should be completed. It was also of utmost importance to ensure that, as promised to those participating, the researcher was the only person to see the completed questionnaires. This was stressed to the operations managers in receipt of the sealed envelopes and strictly adhered to by the researcher. The cover page of the questionnaire makes clear the purpose of the study, the notion that participation is voluntary, and the notion that participants are free to withdraw from the study at any time. It was acknowledged that the content of the questionnaire is of a sensitive nature, and that respondents may find the experience of completing it emotionally evocative. Counselling was thus offered and the researcher's contact details provided on the cover page for this purpose. In addition to this, the researcher returned to each of the stations upon completion of the data analysis and provided group feedback. Results and recommendations were also provided to each of the two Netcare 911 regional managers in charge of the East and West Gauteng regions respectively. It is hoped that by sharing information and suggesting possible practical implementations of that information the present study has not been merely an academic exercise, but one that may impact positively on the population from which the sample was drawn.

5.10 Conclusion

This chapter has served to outline the method used in the present study. It has aimed at describing the demographic composition of the sample employed, justifying and explaining the use of the specific instruments utilised, outlining the procedure and research design adhered to, elucidating the statistical procedures employed for data analysis and discussing crucial ethical considerations taken into account. The following chapter presents a discussion of the results of the data analysis.

CHAPTER 6: RESULTS

6.1 Introduction

This chapter aims at presenting the results of the statistical analyses outlined in the previous chapter. It will present the descriptive statistics of the scales employed, the qualitative findings of the RPWEC, the results of the reliability analyses and the results of the various 't'-tests, correlations, partial correlations and multiple regression equations performed. Each of the research questions laid out in the previous chapter will be addressed and the results of the analyses employed to answer them provided.

6.2 Descriptive Statistics and Qualitative Findings

6.2.1 RPWEC Descriptive Statistics

Relatively high levels of exposure were evidenced among the ECPs in the sample, with scores on the RPWEC ranging up to 104, out of a possible 123 (see table 6.1 for descriptive statistics for the RPWEC). Positive scores on the RPWEC represent negative impact and negative scores represent positive impact. Certain of the respondents reported that their experiences had had a predominantly positive impact on them and a wide range of scores was thus observed. The minimum score of –54 represents a predominantly positive response to the traumata listed in the items of the RPWEC. Twelve respondents achieved an overall score on the RPWEC falling within the negative range, suggesting that their experience had been predominantly positive. The mean score on the RPWEC was 22.90 with a standard deviation of 28.40.

The RPWEC (occurred) score refers to the number of items endorsed as having occurred, irrespective of the appraisal of their impact. This does not reflect the frequency of occurrence but merely whether or not the respondent had been exposed to the item or not. This score provides a more objective measure of exposure than the total RPWEC score, which is based on subjective appraisal. The minimum number of items any respondent had

been exposed to was 13, out of a possible 41. Certain of the respondents endorsed every item of the RPWEC. The mean number of items the subjects had been exposed to was 31.64.

Table 6.1: Descriptive Statistics for the RPWEC

	N	Range	Min.	Max.	Mean	S.D.
RPWEC (Total)	106	158	-54	104	22.90	28.40
RPWEC (Occurred)	102	28	13	41	31.64	7.24

Table 6.2 presents the endorsement frequencies and overall impact ratings of the items of the RPWEC.

Table 6.2: RPWEC Frequency Table

Event	Occurred (Occ)	% of sample	Total Impact Rating (TIR)	TIR/ Occ
1. I witnessed the death of a co-worker	35	33%	44	1.26
2. I heard about the death of a co-worker	93	88%	91	.98
3. I heard about the suicide of a co-worker	50	47%	24	.48
4. I was seriously harmed or injured	36	34%	39	1.08
5. I rendered assistance to someone I knew who was seriously injured	78	74%	46	.59
6. I rendered aid at a sudden infant death syndrome	64	60%	62	.97
7. I was exposed to hazardous chemicals and/or environments	62	58%	24	.38
8. I observed a co-worker being seriously harmed or injured	40	38%	46	1.15

Event	Occurred (Occ)	% of sample	Total Impact Rating (TIR)	TIR/ Occ
9. I heard about a co-worker being seriously harmed or injured	80	75%	76	.95
10. I rendered aid to a seriously abused child	62	58%	87	1.40
11. I rendered aid to a seriously injured child	97	92%	110	1.18
12. I rendered aid at a paediatric drowning	76	72%	100	1.32
13. I rendered aid at an incident with multiple deaths (1-4 deaths)	99	93%	90	.91
14. I rendered aid at an incident with multiple deaths (>4 deaths)	81	76%	56	.69
15. I witnessed people dying	96	91%	92	.95
16. I rendered assistance to multiple people who were badly injured	102	96%	55	.54
17. I rendered aid to a seriously injured adolescent	88	83%	41	.46
18. I rendered aid to a dangerous psychiatric patient	82	77%	17	.21
19. I rendered assistance to people infected with disease (eg HIV/Aids and related diseases)	104	98%	31	.29
20. My safety was at risk	88	83%	66	.75
21. My life was threatened	79	75%	72	.91
22. I rendered aid to a person in full cardiac arrest with the family present	101	95%	83	.82
23. I rendered aid to a mutilated adult homicide victim	70	66%	52	.74
24. I rendered assistance to an injured person who resembled myself or someone close to me	64	60%	61	.95

Event	Occurred (Occ)	% of sample	Total Impact Rating (TIR)	TIR/ Occ
25. I rendered aid to an attempted adult homicide victim	83	78%	48	.57
26. I rendered aid to a sexual assault victim	85	80%	103	1.21
27. I rendered aid at a completed suicide	92	87%	52	.57
28. I rendered aid to an adult stabbing victim	103	97%	19	.18
29. I rendered aid to a gunshot victim of gang/criminal violence	103	97%	39	.38
30. I rendered aid to the perpetrator(s) of a fatal accident	91	86%	44	.48
31. I rendered aid to an adult dead on arrival due to multiple wounds and injuries	98	92%	42	.42
32. I saw badly mutilated bodies	90	85%	69	.77
33. I suffered a minor injury (eg muscle strain, back pain, fracture, concussion)	85	80%	36	.42
34. I rendered assistance to a person who died after a long resuscitation	97	92%	65	.67
35. I rendered CPR to a person in cardiac arrest	98	93%	34	.35
36. I was refused permission to render aid to a chronically ill person	53	50%	36	.68
37. I received incorrect or inadequate information when dispatched on a call	99	93%	108	1.10
38. I had to deal with equipment failure or the incompetence of others	100	94%	131	1.31
39. I rendered aid to an attempted suicide or drug overdose	102	96%	21	.21
40. I rendered aid to an adult dead on arrival due to natural causes	103	97%	34	.33

Event	Occurred (Occ)	% of sample	Total Impact Rating (TIR)	TIR/ Occ
41. I have received verbal abuse while rendering assistance	98	93%	78	.79

The item "I rendered assistance to people infected with disease (eg HIV/Aids and related diseases" was the most commonly endorsed item on the RPWEC (see table 2). Of the sample, 98% reported having had experience of this item. The items "I rendered aid to an adult stabbing victim" and "I rendered aid to a gunshot victim of gang/criminal violence" were among the most commonly endorsed items. These two occurrences were reported by 97% of the sample. The item "I rendered aid to an adult dead on arrival due to natural causes" was also endorsed by 97% of the sample. The items "I rendered assistance to multiple people who were badly injured" and "I rendered aid to an attempted suicide or drug overdose" were endorsed by 96% of the sample. The items most infrequently endorsed were "I witnessed the death of a coworker" and "I was seriously harmed or injured". This is not surprising given the severity of the experiences they describe. What is perhaps surprising is that these items were endorsed by 33% and 34% of the sample respectively. The number of subjects reporting having been exposed to disease testifies to the hazardous conditions in which these ECPs work. The number of respondents who had witnessed a coworker being killed or had been seriously harmed or injured testifies again to the violent and hazardous nature of the work of the South African ECP. The fact that the two of the most commonly endorsed items involve tending to the victims of violence is poignant testimony to the violence of the context in which these ECPs work.

The item achieving the highest overall negative impact rating was "I had to deal with equipment failure or the incompetence of others" (131). The item "I rendered aid to a seriously injured child" (110) achieved the second highest negative impact rating. The item "I received incorrect or inadequate information when dispatched on a call" (108) was third in line. In fourth and fifth place were the items "I rendered aid to a sexual assault victim" (103) and "I rendered aid at a paediatric drowning" (100) respectively. These are the items

that were rated as having the most negative impact on the majority of the sample. Dividing the overall negative impact rating by the number of respondents having endorsed the item gives a more accurate indication of the events that, when experienced, tend to have the most negative impact. The item that was rated as having the most negative impact on the subjects who had experienced it, was "I rendered aid to a seriously abused child" (1.40). The second was "I rendered aid at a paediatric drowning" (1.32). The third was "I had to deal with equipment failure or the incompetence of others" (1.31), followed by "I witnessed the death of a coworker" (1.26), "I rendered aid to a sexual assault victim" (1.21), "I rendered aid to a seriously injured child" (1.18), "I observed a coworker being seriously harmed or injured" (1.15) and "I received incorrect or inadequate information when dispatched on a call" (1.10). Of the 8 experiences that appear to have had the most negative impact among respondents, 3 of these involved children. Also noteworthy is the fact that dealing with the incompetence of others or equipment failure, and receiving inadequate information, both predominantly organisational stressors, are rated as having had a profoundly negative impact among respondents.

6.2.2 Qualitative Findings

A total of 33 respondents opted to utilise the open-ended section at the end of the RPWEC. These responses referred to personal or off-duty trauma such as "My father having cancer", "My brother died and I did nothing to help", "I witnessed a close friend die in a motorcycle accident" and "I administered CPR to my girlfriend's brother". Two respondents reported having been hijacked. Racism was reported in one response: "a patient refused my help because I am black". Two respondents reported trauma experienced whilst serving in the military. These responses were "I witnessed a colleague being blown-up" and "I witnessed a priest killed in front of me". Other responses referred to organisational stressors. These included "I was called in for a disciplinary hearing", "Waiting for assistance that did not arrive", "Traffic that refuses to get out of the way", "Conflict with colleagues" and "The negligence of colleagues on scene". Responses also referred to other work-related trauma not explicitly covered in the RPWEC, such as "I was attacked by a mental patient", "I rendered assistance at the rape of a 1 year-old with bowel eviceration", "Having to deal with

decomposed bodies", "Assisting abandoned new-born babies", "Assisting at a family killing", "Knocking down and killing a pedestrian whilst rushing to a call", "Rendering aid to suspects of rape and murder" and "Witnessing a patient die, trapped in his vehicle, and not being able to do anything to help".

6.2.3 RIES Descriptive Statistics and Incidence of PTSD in the Sample

Table 6.3 presents the descriptive statistics for the RIES. Scores on the RIES ranged from 0 to the maximum possible score of 105. The mean total score was 35.05, the mean Intrusion score 11.11, the mean Avoidance score 14.10, and the mean Increased Arousal score 10.01. A varied spread of symptom levels was apparent in that a standard deviation of 24.71 was observed for the scale as a whole. One respondent reported experiencing the full range of symptoms often in the last 7 days and achieved a score of 105. Only 3 respondents reported experiencing no symptoms whatsoever.

Table 6.3: Descriptive Statistics for the RIES

	N	Range	Min.	Max.	Mean	S.D.
RIES (Total)	107	105	0	105	35.05	24.71
Intrusion	107	35	0	35	11.11	8.82
Avoidance	107	40	0	40	14.10	10.11
Increased Arousal	107	30	0	30	10.01	7.85

An examination of the items rated as occurring most frequently gives an indication of the predominant symptoms in the sample. The item rated most frequently was "I tried to remove it from memory" from the Avoidance subscale. The second most frequently reported symptom was "I constantly found myself being 'on guard'" (Increased Arousal), followed by "I avoided letting myself get upset when I thought about it or was reminded of it" (Avoidance) and then "I was more irritable or angry than usual" (Increased Arousal) and

"Pictures about it popped into my mind" (Intrusion). These items come from the range of clusters, suggesting that there is no one more frequently occurring cluster of symptoms.

To ascertain how many of the subjects in the sample exhibit PTSD, Neal et al's (1994) optimal cut-off of 35 was utilised. According to this cut-off, 35 (33%) of the 107 respondents are classified as exhibiting PTSD. For the sake of comparison, table 6.4 presents the different classifications of PTSD in the sample according to the various cut-offs employed.

Table 6.4: PTSD Cut-Offs

	Cut-Off	No. of Respondents above Cut-Off	% of Respondents above Cut-Off
Neal et al (1994)	35	35	33%
Horowitz et al (1979) Esprey (1996)	Int – 23.1 Avoid – 20.6	10	9%
Horowitz et al (1979) Georgiou & Ortlepp (1998) Davidson (2001)	Int – 21.4 Avoid – 18.2	17	16%
Kopel & Friedman (1997) Viedge (2001)	25	51	48%

According to Horowitz et al's (1979) means of 23.1 and 20.6 respectively, which are frequently employed as cut-offs in South African studies (Esprey, 1996), only 10 (9%) respondents would classify as exhibiting PTSD. According to the means reported by Horowitz et al (1979) of 21.4 and 18.2 respectively, also employed in other South African studies (Davidson, 2001; Georgiou & Ortlepp, 1998), only 17 (16%) respondents would classify as exhibiting PTSD. The cut-offs employed in Davidson's (2001), Esprey's (1996) and Georgiou and Ortlepp's (1998) studies are particularly strict as they require that the cut-offs for each of the scales be met. Employing the cutoff of 25 suggested by other South

African researchers (Kopel & Friedman, 1997; Viedge, 2001), a liberal 51 (48%) respondents would qualify. It is clear that the use of discrepant cut-offs across studies is likely to confound comparison and result in arbitrary and erroneous classification. The cut-off proposed by Neal et al (1994) presents arguably the most substantiated and the most moderate cut-off between the two extremes of underestimation and inflation. According to this cut-off, 33% of the sample employed for the present study exhibits PTSD.

6.2.4 SS-A, SS-B and NOS Descriptive Statistics

Scores on the SS-A (see table 6.5) ranged from a minimum of 44 and a maximum of 91, which was not far off from the maximum possible score of 92. Subjects in the sample reported, on the whole, moderate to high levels of social support on the SS-A. A mean of 72.22 was observed, with a standard deviation of 9.31. The mean for the SS-A Family sub-scale was 27.04; for the SS-A Friends sub-scale 21.24; and for the SS-A Other sub-scale 24.19. There is a substantial difference, of almost two standard deviations, in mean scores on the family and friends subscales. Respondents appeared to perceive themselves as more esteemed and cared for by family members than they did by friends.

Scores on the SS-B Family (SS-BF) subscale ranged from 48 to the highest obtainable score of 225. The mean observed for this scale was 177.41, with a standard deviation of 38.55. The SS-BF Emotional Support subscale evidenced a mean of 39.96, the Socializing subscale 27.79, the Practical Assistance subscale 32.70, the Financial Assistance subscale 30.43, and the Advice/Guidance subscale 46.50.

It is noted that scores on the SS-BF, particularly on the Socializing, Practical Assistance, Financial and Advice/Guidance subscales, are skewed towards the top end of the range. This suggests that the majority of the sample reported high levels of perceived supportive behaviours from family, but that a few individuals have reported very low scores, drawing the minimum score down. These few individuals act as veritable outliers and result in a skewed distribution of scores.

Table 6.5: Descriptive Statistics for SS-A, SS-B and NOS

	N	Range	Min.	Max.	Mean	S.D.
SS-A (Total)	104	47	44	91	72.22	9.31
SS-A (F)	104	16	16	32	27.04	3.65
SS-A (Fr)	104	31	10	41	21.24	4.30
SS-A (O)	104	17	15	32	24.19	3.42
SS-BF(Total)	103	177	48	225	177.41	38.55
SS-BF (Emot)	103	39	11	50	39.96	9.02
SS-BF (Soc)	103	28	7	35	27.79	6.04
SS-BF (Prac)	103	32	8	40	32.70	7.20
SS-BF (Fin)	103	32	8	40	30.43	8.56
SS-BF (Adv)	103	48	12	60	46.50	10.25
SS-BFR(Total)	103	176	49	225	155.59	41.95
SS-BFR (Emot)	103	38	12	50	35.32	9.78
SS-BFR (Soc)	103	27	8	35	25.96	6.60
SS-BFR (Prac)	103	32	8	40	28.28	7.98
SS-BFR (Fin)	103	32	8	40	24.54	8.28
SS-BFR(Adv)	103	48	12	60	41.57	11.37
NOS (Total)	104	41	30	71	52.34	7.66

Scores on the SS-B Friends (SS-BFR) subscale ranged from 49 to the highest obtainable score of 225. The mean observed for this scale was 155.59, with a standard deviation of 41.95. The SS-BFR Emotional Support subscale evidenced a mean of 35.32, the Socializing subscale 25.96, the Practical Assistance subscale 28.28, the Financial Assistance subscale 24.54, and the Advice/Guidance subscale 41.57. The difference between the total means of the Family and Friends subscales suggest that more support was reported from family than from friends, but this difference is less than a standard deviation and is thus not particularly noteworthy. Scores on the NOS ranged from 30 to 71, which is not far off from the highest

possible score of 80. The mean evidenced on this subscale was 52.34 with a standard deviation of 7.66.

6.3 Reliability Analyses

The data yielded by the sample were utilised to establish the internal consistency of each of the instruments used in the present study. Table 6.6 presents the Cronbach alpha coefficients calculated for each of the scales and sub-scales.

The RPWEC yielded an impressive alpha co-efficient of 0.91. The RIES and its subscales each yielded an impressive alpha coefficient of 0.91. The SS-A and its subscales each yielded an alpha coefficient of 0.89. Both the SS-B (Family) and the SS-B (Friends) and each of their subscales yielded an alpha co-efficient of 0.89. The NOS similarly yielded an alpha co-efficient of 0.89. According to Anastasi and Urbino (1997) an alpha co-efficient above 0.7 is evidence of good internal reliability. All of the scales employed for the present study are thus shown by their Cronbach alpha co-efficients to be internally reliable measures.

Table 6.6: Cronbach Alpha Co-Efficients

	Standardised Cronbach Alpha Co-Efficient
RPWEC (Total)	.9089
RIES (Total)	.9095
RIES (Intrusion)	.9093
RIES (Avoidance)	.9089
RIES (Increased Arousal)	.9109
SS-A (Total)	.8863
SS-A (Family)	.8909
SS-A (Friends)	.8900
SS-A (Others)	.8902

	Standardised Cronbach Alpha Co-Efficient
SS-BF (Total)	.8852
SS-BF (Emotional)	.8872
SS-BF (Socializing)	.8856
SS-BF (Practical)	.8873
SS-BF (Financial)	.8879
SS-BF (Advice)	.8865
SS-BFR (Total)	.8867
SS-BFR (Emotional)	.8874
SS-BFR (Socializing)	.8883
SS-BFR (Practical)	.8879
SS-BFR (Financial)	.8882
SS-BFR (Advice)	.8877
NOS (Total)	.8905

6.4 Biographical Variables

A series of analyses were carried out to examine the relationship between various biographical variables and symptoms of PTSD in the sample. The criterion biographical variables investigated by means of ANOVA were age, marital status, position (BAA, AEA or Paramedic) and station, and by means of 't'-tests were gender and whether or not the respondent had received prior counselling. A correlation was conducted for length of service as it was treated as a continuous variable.

The ANOVA and 't'-tests revealed no significant differences between the RIES scores of the different groups with respect to gender, age, marital status, position, and whether or not the respondent had received prior counselling. ANOVA revealed significant differences between the RIES means of the 10 stations (see table 6.7). Given the number of 't'-test comparisons to be carried out, a Bonferroni correction was made to reduce the risk of a Type I error (Rosenthal & Rosnow, 1991). The correction provides a

conservative estimate, which inflates the possibility of a Type II error (Rosenthal & Rosnow, 1991). No significant differences were observed between any of the stations using Bonferroni's conservative correction. Given that the null hypothesis was rejected in the ANOVA, it is quite possible that significant differences between stations were masked by the inflation of Type II error necessitated by the Bonferroni correction. No statistical differences were uncovered, but observable differences are still worthy of mention.

Table 6.7 provides a tabulation of the sample size, response rate (RSP%) and RIES descriptive statistics for each of the stations from which the sample was drawn.

Table 6.7: RIES Statistics by Station

	N	RSP%	Range	Min.	Max.	Mean	S.D.
Linksfield	10	63%	56	1	57	33.20	19.28
Sunninghill/ Midrand	9	30%	40	6	46	28.89	12.79
Olivedale	8	30%	47	16	63	44.75	17.33
Benoni	8	89%	85	0	85	34.25	32.37
Kempton Park	10	95%	65	18	83	49.20	21.61
Milpark/ Garden City	20	67%	67	0	67	23.75	22.12
Union/ Mulbarton	15	63%	101	0	101	39.20	33.54
Roodepoort	12	75%	83	0	83	31.75	24.50
Krugersdorp	5	63%	46	9	55	36.20	17.47
Germiston/ Boksburg	10	37%	99	6	105	40.90	28.16

Kempton Park evidenced the highest mean RIES score, whilst Milpark/Garden City evidenced the lowest. It is noteworthy that the least symptomatic respondent from Kempton Park still evidenced a score of 18. Also important to note is that the mean score among the respondents from Kempton Park is substantially higher than Neal et al's (1994) cut-off of 35 for classification of PTSD. The means at Olivedale (44.75), Germiston/Boksburg (40.90), Union/Mulbarton (39.20) and Krugersdorp (36.20) are also higher than the cut-off, suggesting high levels of symptoms among the respondents from these stations. Stations reporting the largest range of RIES scores are Union/Mulbarton (101), Germiston/Boksburg (99) and Benoni (85). What these large ranges suggest is that there is great variation in symptoms between respondents at each of these stations. Some respondents have reported virtually no symptoms, and others are highly symptomatic. Of concern is that the stations with the highest mean scores, namely Kempton Park and Olivedale, also evidence the highest minumum scores, suggesting that all respondents from these stations have reported a degree of distress.

ANOVA was also conducted on the RPWEC scores between the stations. Again the null hypothesis was rejected, but following the Bonferroni correction, no specific significant differences emerged from the 't'- tests. Important to note is that the different stations evidenced varying response rates. What these response rates give an indication of is the relative confidence with which one can assume that the sample drawn is representative of that particular station population. One can observe from the table that Kempton Park evidenced the highest response rate, with 95% of the station's personnel chosing to participate in the study. Olivedale and Sunninghill/Midrand reported the lowest response rates of 30%.

A Pearson correlation was conducted between years of experience and the RIES. A significant positive correlation was found at the .05 level between length of service and RIES scores. This suggests that the more experienced ECPs in the sample exhibited higher levels of symptoms. Noteworthy is that length of service was also significantly positively correlated at the .05 level with scores on the RPWEC. This suggests that the more

experienced ECPs in the sample had both been exposed to more events that had a negative impact upon them and exhibited higher levels of PTSD symptoms.

No significant differences were observed between exposure scores according to any of the remaining biographical variables. Further analyses were carried out on differences between groups on the social support measures. ANOVA and 't'-tests were conducted to examine whether there were any significant differences on the SS-A, SS-B and NOS with respect to the various descriptive variables. No significant differences were found on any of the scales between gender, age, position, marital status or prior counselling. No significant relationship was found between length of service and any of the social support measures.

6.5 Correlations

A number of Pearson's correlations were run between the various scales and sub-scales to ascertain the existence, strength and direction of the relationships under investigation (see table 6.8)

In accordance with expectations, a significant positive correlation was observed between the RPWEC and the RIES. The correlation co-efficient between the two scales emerged as 0,48 ($p < 0.01$). This result answers to the present study's third research question and clearly indicates that exposure to events rated as having a negative impact is related to high levels of PTSD. What is interesting to observe is that when the relationship between the number of RPWEC items the respondent endorsed (the "occurred" score) and the RIES was investigated no significant relationship was found. In fact, the RPWEC (Occurred) score failed to evidence a significant relationship with any of the scales used in the present study. What is suggested is that the mere presence or absence of exposure to objectively defined traumatic events is not related to PTSD symptoms. It is the respondent's subjective appraisal of the impact of those potentially traumatic events that is significantly related to symptoms of PTSD.

Table 6.8: Whole Scale Pearson Correlations

	RIES	RPWEC (Total)	RPWEC (Occurred)	SS-A	SS-BF	SS-BFR	NOS
RIES	1.00	-	-	-	-	-	-
RPWEC (Total)	0.48**	1.00	-	-	-	-	-
RPWEC (Occurred)	0.11	0.1	1.00	-	-	-	-
SS-A	-0.26**	-0.12	-0.16	1.00	-	-	-
SS-BF	-0.26**	-0.17	-0.11	0.63**	1.00	-	-
SS-BFR	-0.43**	-0.32**	-0.12	0.62**	0.58**	1.00	-
NOS	-0.41**	-0.26**	-0.04	0.63**	0.54**	0.67**	1.00

*significant at the 0.05 level

**significant at the 0.01 level

The RIES was found to be significantly correlated with all four of the social support scales. The correlation co-efficients indicate that symptoms of PTSD are negatively and directly correlated, at the 0.01 level, with the appraisal of being supported, with supportive behaviours perceived from both family and friends, and with a positive network orientation. This answers the first part of the present study's fifth research question and clearly indicates the presence of a main (direct) effect between symptoms of PTSD and each of the dimensions of social support under investigation. The relative contribution of each of these dimensions, and the answer to the second part of the fifth research question, was investigated using multiple regression and will be discussed in the following section.

The social support measures were all significantly positively correlated with one another at the 0.01 level. This answers the present study's fourth research question and suggests, in accordance with the literature, that the dimensions of social support measured by each of the scales employed are highly correlated with one another. Interesting to note is that a significant negative correlation was found between the NOS and the RPWEC (-0.26;

p<0.01) and between the SS-BFR and the RPWEC (-0.32; p<0.01). No significant relationship was evidenced between the RPWEC and the SS-A or between the RPWEC and the SS-BF, however. What this suggests is that exposure to events rated as having a negative impact is associated with a negative network orientation and a perception of less available supportive behaviours from friends, but not with the appraisal of being supported or the perception of available supportive behaviours from family.

The matrix of correlations between the RIES and the RPWEC and the various sub-scales of the SS-A and SS-B is presented in table 6.9.

Table 6.9: Subscale Correlations

	RIES	RPWEC (Total)
SS-A (Family)	-0.12	-0.08
SS-A (Friends)	-0.23*	-0.08
SS-A (Others)	-0.29**	-0.13
SS-BF (Emotional)	-0.24*	-0.17
SS-BF (Socializing)	-0.27**	-0.19
SS-BF (Practical)	-0.26**	-0.21*
SS-BF (Financial)	-0.24*	-0.11
SS-BF (Advice)	-0.24*	-0.14
SS-BFR (Emotional)	-0.43**	-0.33**
SS-BFR (Socializing)	-0.42**	-0.37**
SS-BFR (Practical)	-0.41**	-0.32**
SS-BFR (Financial)	-0.40**	-0.25**
SS-BFR (Advice)	-0.41**	-0.27**

*significant at the 0.05 level

**significant at the 0.01 level

An analysis of the correlations between the SS-A and SS-B subscales and the RIES and RPWEC allows for the examination of the relationship between both the mode and the

source of support with exposure and symptoms of PTSD. It is interesting to note that all of the SS-A and SS-B subscales are significantly negatively correlated with the RIES, but for one: the SS-A (Family). This subscale failed to correlate significantly with the RIES, suggesting that the appraisal of being supported by ones family was not significantly associated with symptoms of PTSD in the sample. The checkered display of correlations between the RPWEC and the various SS-A and SS-B subscales presents an interesting pattern. It is evident that like the SS-A total scale, none of the SS-A subscales correlated significantly with the RPWEC. This indicates that exposure to events rated as having a negative impact was not associated with the appraisal of being supported by family, friends or others. It is evident that like the SS-BFR total scale, all of the SS-BFR subscales correlated significantly with the RPWEC at the 0.01 level. This suggests that exposure to events rated as having a negative impact was significantly associated with the perception of available support from friends, irrespective of the mode of support. What is interesting to note is that although the SS-BF total scale emerged as uncorrelated with the RPWEC, one of its subscales evidenced a significant correlation with the RPWEC. The SS-BF Practical Assistance subscale emerged as significantly negatively correlated with the RPWEC, suggesting that exposure to events rated as having a negative impact is associated with the perception of less available practical assistance from family.

6.6 Partial Correlations

The method of partial correlation was chosen as the most appropriate statistical technique for the purpose of testing the buffering hypothesis. By examining the correlation between the RPWEC and the RIES with the SS-A, SS-BF, SS-BFR and NOS statistically partialled out of the equation, and by comparing these partial correlations to the original correlation, it is possible to observe whether any of the social support variables plays a buffering role in the relationship between exposure and PTSD. If the buffering hypothesis holds, then these first order partial correlations should be significantly stronger than the original correlation. Table 6.10 presents the first order partial correlations evidenced when the SS-A, SS-BF, SS-BFR and NOS were individually partialled out of the relationship between the RPWEC and the RIES.

Table 6.10: First Order Partial Correlations

	Partial Correlation Co-Efficient
SS-A	0.46
SS-BF	0.45
SS-BFR	0.39
NOS	0.42

*significant difference at the 0.05 level

**significant difference at the 0.01 level

Each of these partial correlation co-efficients was compared to the original correlation between the RPWEC and RIES of 0.48 to examine the difference. None of these differences emerged as statistically significant, suggesting that none of the social support variables examined acted as a buffer in the relationship between exposure and symptoms of PTSD in the sample. Thus irrespective of levels of each of the social support variables, the relationship between exposure and symptoms of PTSD remained unchanged. Contrary to the expectation of the buffering hypothesis, although not significantly different to the original correlation, each of the partial correlations was weaker and not stronger as would intuitively be expected. The two social support variables that appear to have exerted the most influence on the exposure-PTS relationship were the SS-BFR and the NOS, as their respective partial correlations differ most to the original. A second order partial correlation was thus conducted to examine whether these two variables together may exert a significant effect within the exposure-PTS relationship. This second order partial correlation co-efficient (0.36) did not emerge as significantly different to the original either. The partial correlations conducted answer to the sixth research question of the present study. No evidence was found for the buffering hypothesis.

6.7 Multiple Regression

Multiple regression was carried out to investigate the relative contributions of exposure and each of the social support measures in predicting the variance in symptoms of PTSD. The

multiple regression procedure afforded a unique opportunity to examine the relationships between the variables under investigation when considered together. This augments the investigation thus far of individual contributions and relationships. In addition, the examination of the contributions of the various social support subscales to the regression equation answers to the present study's seventh and eighth research questions. The analysis of the correlations between the variables presented above indicates that the variables are highly correlated with one another. The SS-A, SS-B and NOS are highly correlated with one another and the SS-BFR and NOS are highly correlated with the RPWEC. This suggests the presence of multicollinearity. As a consequence, the backwards stepwise procedure was chosen as this is the best multiple regression method for the purposes of eliminating potential multicollinearity confounds (Kleinbaum et al, 1998). The first backwards stepwise regression was carried out with the RIES as the dependent variable and the SS-A, SS-BF, SS-BFR, NOS and RPWEC as the independent variables. The results of this regression are presented in table 6.11.

Table 6.11: Whole Scale Multiple Regression

	Parameter Estimate	F Value	Pr > F
Intercept	79.1390	27.11	<.0001
RPWEC (Total)	0.3397	19.35	<.0001
SS-BFR	-0.1168	2.95	0.0889
NOS	-0.6331	3.07	0.0827

R-Square	0.3555

IV's: RPWEC; SS-A; SS-BF; SS-BFR and NOS

DV: RIES

The variables presented above are those present at the last step of the regression. These variables are deemed to contribute to the model and were thus left in the model, whilst the SS-A and SS-BF were removed because they did not significantly contribute. The RPWEC

emerged as the only significant correlate of PTSD at the 0.01 level, however. Variance in exposure appears strongly predictive of variance in PTSD symptoms. This confirms the findings of the correlation analysis and answers again to the third research question, confirming that exposure and symptoms of PTSD are significantly correlated. Although remaining in the model, the SS-BFR and the NOS failed to prove significant at the 0.05 level. They are considered to contribute to the model, but not significantly. The SS-A and SS-BF did not contribute to the model and were removed, however. This implies that the perception of available supportive behaviours from friends and positive network orientation are negatively associated with symptoms of PTSD, whilst the perception of available supportive behaviours from family and the appraisal of being supported do not, when considered in conjunction with the other variables, contribute anything new to the prediction of variance in symptoms of PTSD. The cumulative R-Square of .3555 indicates that the variance in the three variables left in the model predicts 36% of the variance in PTSD symptoms.

It is important at this juncture to mention the rules of thumb regarding the number of predictors in a regression relative to the sample size. Green (1991) provides a formula which has been widely adopted (see Tabachnik & Fidell, 1996), namely:

n= 50 + 8P (where P is the number of predictor variables)

The sample size for the present study was obtained in view of this minimum requirement. It is clear that according to Green's (1991) formula, the minimum sample size required for the whole scale regression in the present study would be 90. The sample size of 107 obtained fulfills this criterion.

Table 6.12 presents the findings of the multiple regression conducted with the subscales of the SS-A, SS-BF and SS-BFR, together with the NOS. This allows for examination of the relative contributions of the various modes and sources of support under investigation.

Table 6.12: Social Support Subscale Multiple Regression

	Parameter Estimate	F Value	Pr > F
Intercept	76.0494	78.60	<.0001
SS-BFR (Emotional)	-1.1443	24.07	<.0001

R-Square	0.1956

IV's: SS-A (Family), SS-A (Friends), SS-A (Others), SS-BF (Emot), SS-BF (Soc), SS-BF (Prac), SS-BF (Fin), SS-BF (Adv), SS-BFR (Emot), SS-BFR (Soc), SS-BFR (Prac), SS-BFR (Fin), SS-BFR (Adv),

DV : RIES

Of all the SS-A, SS-BF and SS-BFR subscales input into the regression equation, only one emerged as significant, namely: SS-BFR (Emotional). Not only was this the only subscale to remain in the model, but it evidenced a significance at the 0.0001 level. This suggests when all the sources and modes of support examined in the present study are investigated together, emotional support from friends is the most highly correlated (in a negative direction) with symptoms of PTSD. In fact, according to the R-Square value, 20% of the variance in symptoms of PTSD can be explained by variance in emotional support from friends. This variable evidences a particularly impressive predictive power. This answers to the present study's seventh and eighth research questions and indicates that emotional support from friends is the source and mode combination most correlated with symptoms of PTSD. It is important to note, however, that the number of predictor variables input into the social support subscale regression model does not fulfill Green's (1991) rule of thumb regarding the necessary sample size. According to Green's (1991) formula, the minimum sample size required, given that the social support subscale regression boasts 13 predictor variables, would be 154. This does raise a question regarding the stability of this model: a point that is explored in more detail in the discussion section.

6.8 Summary of Findings

This chapter sought to present the findings of the data analyses conducted and to answer to the research questions posed in chapter 5. The following is a summary of the findings as they pertain to the research questions. The data presented suggests that subjects in the sample have been exposed to a wide range of traumatic events. The minimum number of potentially traumatic events any respondent had been exposed to was 13, out of a possible 41. The potentially traumatic event to which most of the sample had been exposed was having rendered assistance to people infected with disease (eg HIV/Aids and related diseases). This testifies to the hazardous conditions in which the ECPs in the sample work. A significant number of respondents reported having witnessed a coworker being killed or had themselves been seriously harmed or injured. This, together with the fact that two of the most commonly reported events involve tending to the victims of violence, testifies to the violence of the context in which these ECPs work. The event that was rated as having the most negative impact on the subjects who had experienced it, was having rendered aid to a seriously abused child. Of the 8 experiences that appear to have had the most negative impact among respondents, 3 of these involved children.

According to Neal et al's (1994) IES cut-offs, 35 (33%) of the 107 respondents are classified as exhibiting PTSD. The results of the correlations and multiple regression equations suggest a significant positive correlation between exposure and symptoms of PTSD. The correlations revealed that the social support measures employed were, in accordance with expectation, each highly correlated with one another. Correlations also revealed that each of the social support measures was significantly negatively correlated with symptoms of PTSD. This supported the main effect hypothesis. The relative contribution of each of these dimensions of support appears complex. For the sample as a whole, it would appear that network orientation and perception of available supportive behaviours from friends are more associated with symptoms of PTSD than the appraisal of being supported or the perception of available supportive behaviours from family.

The results of the partial correlations conducted fail to support the buffering hypothesis. None of the social support variables investigated in the present study emerged as a significant buffer in the exposure-PTS relationship. A multiple regression equation examining the SS-A and SS-B subscales allowed for an investigation of the sources and modes of support examined in the present study. The results suggest that the only mode and source of support significantly associated with of symptoms of PTSD in the sample was the perception of available emotional support from friends. The following chapter presents a discussion of the results presented.

CHAPTER 7: DISCUSSION

7.1 Introduction

This chapter serves to make sense of the results reported in the previous chapter and to position a discussion of the findings of the research within the body of literature that has been reviewed.

7.2 Exposure in the Sample

It is apparent that most respondents in the sample had been exposed to a number of potentially traumatic experiences, and that the impact of these experiences had in many cases been profound. The highest score achieved on the RPWEC was 104, which came close to the highest possible score of 123. The lowest number of items endorsed as having been experienced by any one respondent was 13, and a number of respondents endorsed all of the items, suggesting that all respondents in the sample had been exposed to a number of potentially traumatic stressors. Interesting to note is that the lowest score on the RPWEC was –54 and that 12 respondents' overall scores fell within the negative range. What this suggests is that the potentially traumatic events to which these 12 respondents were exposed were appraised as having an overall positive impact. This presents an important argument in favour of assessing an individual's appraisal of an event as traumatic and against assuming that exposure to potentially traumatic stressors always results in a negative impact.

This finding supports Paton and Smith's (1996) contention that traumatic exposure may result in positive outcomes. Dyregrov et al. (1996, p.553) found in their study of emergency worker reactions following a bus accident, that many "had come to a greater sense of appreciation and care for their loved ones, they appreciated life itself more, felt that life was more intense, and they felt in awe of people's strength". One respondent in the present study expressed that he had received a heartfelt "thank you" from a patient he had saved and that this had made that particular experience positive for him. What this finding also supports is the revision of the PWEC from a checklist of items to a more sensitive instrument

measuring appraisal. Beaton et al. (1998, p.826) found in their study of firefighters and ECPs that "there were large differences between participants in their appraisals of stressor intensity… emphasising the important role of individual response specificity". The utilisation of mere occurrence to the neglect of the appraisal of each item's impact would arguably have missed the nuances of individual interpretation that characterise the trauma response and are clearly evident in the sample. This is demonstrated clearly in the finding that the occurrence score generated from the RPWEC was not correlated with any of the variables examined in the study. It was only when the impact rating was observed that strong correlations were evident. A wide range of scores was evidenced on the RPWEC, which bode well for an accurate assessment of the role of social support in the relationship between exposure and PTSD.

The endorsement frequencies for the items on the RPWEC present a clear indication of the types of traumata the ECPs in the sample are most frequently exposed to, and the ratings for each indicate the relative impact such traumata tend to have. It is interesting to observe that 98% of respondents reported having rendered aid to people infected with disease. In a country rife with HIV/Aids, this endorsement frequency is perhaps not surprising, but it testifies to the hazardous nature of the work these ECPs perform. The fact that 97% of the sample reported having assisted an adult stabbing victim, and to having rendered aid to a gunshot victim of gang/criminal violence serves as testimony to the violent nature of the context in which these ECPs work. The consequences of willful malevolence that these ECPs confront with such frequency distinguish them from their international counterparts. These two items on the original IS (Beaton et al., 1998) from which the RPWEC was drawn were each endorsed by only 21% of the sample of 173 American combined ECP/firefighters employed for their pilot study. The frequency with which the South African ECPs in the present study reported being exposed to these incidents dwarves this American statistic. The nature of these particular incidents, to which so many of the sample had been exposed, may be of particular concern as the psychological sequelae following acts of deliberate intent, as opposed to accidents or acts of God, are presumed to be more problematic (Figley, 1985; Janoff-Bulman, 1985).

The fact that 97% of the sample reported having rendered aid to an adult dead on arrival due to natural causes is in keeping with Beaton et al.'s (1998) study which found this to be the second most commonly endorsed item, following resuscitating a patient in cardiac arrest. The most infrequently endorsed items in the present study were "I witnessed the death of a co-worker" and "I was seriously harmed or injured". These were also the least frequently endorsed in Beaton et al.'s (1998) study, with only 0% and 2% endorsement respectively. This is perhaps not surprising given the severity of the incidents described. These would be expected to occur less frequently than being exposed to an adult dead on arrival for example, which is a more routine occurrence. The fact that these relatively "infrequent" occurrences were still endorsed by 33% and 34% of the sample respectively testifies again to the violent and hazardous nature of the South African ECP's job.

An examination of the impact ratings reported for each of the items allows for a deeper understanding of those particular incidents that, when experienced, tended to have the most negative emotional impact on respondents. The item rated as having the most negative impact on those that had had experience of it was "I rendered aid to a seriously abused child". The second was "I rendered aid at a paediatric drowning". It is noteworthy that the item evidencing the sixth most negative impact for those that had experienced it also involved a child: "I rendered aid to a seriously injured child". The potency of exposure to incidents involving children has been widely documented in the literature (Beaton et al., 1998; Dyregrov et al., 1996; McCammon, 1996; Paton, 1994; Robinson et al., 1997). Dyregrov et al. (1996, p.541) state that "when children are the victims of accident and disaster situations, more intense emotional responses can be expected from the helpers".

Noteworthy is the fact that certain of the items pertaining to predominantly organisational stressors were rated as having had a profound negative impact. The third most negative impact rating was reported for the item "I had to deal with equipment failure or the incompetence of others" and the eighth most negative rating was reported for the item "I received incorrect or inadequate information when dispatched on a call". What this suggests is that the ECPs in the sample found these organisational stressors to have a far more negative impact than many of the more potentially traumatic incidents listed. Paton and

Smith (1996) propose that in critical occupations it is particularly difficult to separate organisational stressors from traumatic stressors, because the traumatic stressors are work-ralated. Also suggested is that members of critical occupations may be more inclined to attribute stress to organisational variables than to admit to emotional reactions to traumatic events. Bonifacio (1991) provides a psychodynamic understanding of the "blame the organisation" attitude often present among police officers specifically, and emergency services personnel more generally. He proposes that in the wake of traumatic exposure the emergency worker may feel anger towards the organisation whom he/she may unconsciously desire to be the "omnipotent, loving parent who can restore his lost feelings of security and invulnerability" (Bonifacio, 1991, p.181).

The item "I witnessed the death of a coworker" was rated as having had an extremely negative impact on those that had experience of it, and it emerged as the fourth most negatively rated item. In Beaton et al.'s (1998) study this item was ranked as the most severe stressor of all. This rating was based on imagined impact, however, as no subjects in the sample had actually had experience of it. In the present study, it was experienced by almost a third of the sample. It was also rated as having had a profoundly negative impact. Related to this is the item "I observed a coworker being seriously harmed or injured", which emerged as the seventh most negatively rated item. This was also rated as the seventh most severe stressor in Beaton et al.'s (1998) study, but it was only experienced by 2% of the sample. In the present study, 38% of the sample had had experience of it. Important to note is that hearing of the death of a coworker and hearing of a serious injury to a coworker were also rated as having profoundly negative impacts. In addition, these two items were endorsed by an astounding 88% and 75% of the sample respectively. The negative ratings these items received lends support for the argument that indirect exposure can be significantly traumatic (Creamer et al., 1993; Green, 1993).

The item "I rendered aid to a sexual assault victim" was rated as having the fifth most negative impact. Interestingly, this was rated as the 22nd most severe stressor by Beaton et al.'s (1998) sample. Evidently, the South African ECPs employed for the present study were substantially more negatively affected by this experience than their American counterparts.

It is possible that in South Africa the nature of the sexual assault is often particularly violent and may frequently involve minors. This may result in a more traumatic experience for these ECPs. What may also impact on this appraisal is the frequency of exposure to such incidents. Eighty percent of the sample employed for the present study, compared to only 37% of Beaton et al.'s (1998) sample, reported having had experience of this item. Although this does not give an absolute indication of exposure frequency per se, there is reason to believe that in a country where it is estimated that a woman is raped every 26 seconds (People Opposing Women Abuse, 2004) ECPs are likely to encounter these victims relatively often.

Almost a third of the sample chose to utilise the open-ended section at the end of the RPWEC and certain additional stressors were thus reported. These stressors were not included in the analysis, but provide interesting qualitative information. Many of the stressors reported in this section pertained to trauma experienced in the ECPs' private lives. What this serves to highlight is the fact that not all trauma is work-related. It was the purpose of the present study to examine only work-related trauma, but trauma experienced outside of this context is also likely to have impacted on the respondents' levels of PTSD. Other items referred to organisational stressors such as perceived racism, the negligence of colleagues and conflict with coworkers. In light of the widely reported tendency of ECPs and other emergency services personnel to report organisational stressors, often with more emphasis than traumatic stressors (Bonifacio, 1991; Paton & Smith, 1996), these reported stressors are not surprising.

It is interesting to observe that additional work-related stressors were also reported. This suggests that certain significant work-related stressors have not been accounted for in the RPWEC. The item "I rendered aid to the suspects of rape and murder" deserves particular consideration as this is something that emerged consistently as a significant stressor in informal discussion between the researcher and the Netcare 911 ECPs approached to participate. This particular stressor was reported in Davidson's (2001), Davies' (2001) and Georgiou's (1997), studies examining South African ECPs. The additional stressors reported are likely to be rare occurrences in other contexts (eg tending to the rape of a 1-year old

child, assisting at a family killing, assisting abandoned newborn babies), and this may account for the fact that they were not included in the scales from which the PWEC is derived. What is suggested is that certain items particular to the South African context might be added to the RPWEC to account more accurately for the experience of the South African ECP.

According to Paton and Smith (1996) research exploring those particular event variables that place emergency services personnel at risk of PTSD is crucial. They propose that findings from such investigations will enhance both a theoretical understanding of the trauma response within these professions, and provide recommendations for training (Paton & Smith, 1996). The findings of the present study regarding the type of traumata the ECPs in the sample had been exposed to, and the relative impact reported for each, serve to highlight the differences between the exposure of South African ECPs and that of their international counterparts. What these findings also serve to suggest is that those incidents involving children, the death of a coworker or sexual assault victims may be considered "high risk" incidents among ECPs. These incidents may be targeted in role-plays in training or perhaps an acknowledgement of their potential for a negative emotional response may normalise such a response when experienced. In addition, colleagues and supervisors may be advised to be on special alert for any signs of a PTS response following such incidents. It may be well-advised to routinely recommend debriefing after exposure to any of these events.

7.3 Symptoms of PTSD in the Sample

A wide range of scores was evidenced on the RPWEC. This wide range of scores was also evident on the RIES, suggesting that a broad range of symptoms was present among subjects in the sample. One respondent reported having experienced the full range of symptoms often over the past 7 days, and 3 respondents reported experiencing no symptoms at all. No particular cluster of symptoms was endorsed any more frequently than any other. This differs from findings reported by Kopel and Friedman (1997) among South African police officers. They reported that the most frequently endorsed symptoms in the sample

were those of avoidance. Kopel and Friedman (1997) found that scores on the avoidance subscale were almost twice as high as those on the intrusion subscale, and they suggested that symptoms of avoidance and the defense mechanism of denial may be particularly prevalent among police officers. These findings supported the assumption of the effects of an organisational culture that discourages the display of emotion and may promote the defense mechanism of denial (Gersons, 1989; McCammon, 1996; Paton & Stephens, 1996).

The mean Avoidance score in the present study (14.10) was slightly higher than that evidenced for each of the Intrusion (11.11) and Increased Arousal (10.01) subscales, but this difference is not substantial. This difference is also rendered moot by the fact that the maximum score possible on the Avoidance subscale is 5 points higher than that on the Intrusion subscale. It is thus to be expected that scores on the Avoidance subscale would be slightly higher. This finding indicates that there is no particular pattern of symptom presentation unique to the sample and that the full spectrum of symptoms was reported as present. This suggests that although symptoms of avoidance may be more prominent among South African police officers, they may not necessarily be significantly so among South African ECPs.

The IES is one of the most commonly employed measures of PTSD symptoms in research, and particularly research with critical occupations (McCammon, 1996). The popularity of the instrument allows for comparison of mean scores across studies, which is a helpful indicator of relative symptom levels in the sample. Kopel and Friedman (1997), examining a sample of South African police officers, reported means of 8.7 (Intrusion) and 15.7 (Avoidance). These means are significantly different from one another, which was not the case in the present study. The mean obtained for the Intrusion subscale in the present study is slightly higher, and the Avoidance mean slightly lower, than that obtained in Kopel and Friedman's (1997) study. Basedau (1999) and Naidoo's (2000) studies also examined police officers and both employed Esprey's (1996) RIES. The researcher reported means of 12.50 (Intrusion), 16.34 (Avoidance) and 10.81 (Increased Arousal) in this earlier study (Basedau, 1999). Naidoo (2000) reported means of 14.21 (Intrusion), 14.21 (Avoidance) and 9.54 (Increased Arousal). The means obtained in the present study appear quite similar to those

reported by Basedau (1999) and Naidoo (2000). It is evident that, like the findings reported in the present study, there is a relatively even spread of symptoms across the symptom clusters. Allen and Ortlepp (1998), also utilising Esprey's (1996) RIES, reported higher mean scores for their sample of security personnel: 17.73 (Intrusion), 16.66 (Avoidance) and 16.03 (Increased Arousal).

Studies examining South African ECPs report similar results to those obtained in the present study (Davidson, 2001; Georgiou, 1997). Georgiou (1997), employing Esprey's (1996) RIES, found means of 10.99 (Intrusion), 15.18 (Avoidance) and 10.59 (Increased Arousal). Davidson (2001), using Weiss and Marmar's (1997) IES-R, reported moderately lower means: 8.66 (Intrusion), 9.87 (Avoidance) and 6.07 (Increased Arousal). It is evident that when compared to South African studies conducted among emergency services personnel, the RIES means evidenced in the present study are for the most part comparable. They are more evenly spread than Kopel and Friedman's (1997), they are slightly lower than those reported by Allen and Ortlepp (1998), and they are moderately higher than those reported by Davidson (2001).

According to Neal et al.'s (1994) IES cut-off for classification of PTSD, 33% of the sample can be classified as exhibiting PTSD. This is a particularly high percentage of respondents, and suggests that South African ECPs are exhibiting profound symptoms of PTSD. What this statistic indicates is that approximately one of every three ECPs that participated in the study is suffering from PTSD. This dramatic percentage does not account for those ECPs exhibiting what Schutzwohl and Maercker (1999) have termed "partial PTSD". The sample as a whole did not appear to exhibit an atypical profile of symptoms, displaying as it did the full range, but this does not rule out the possibility that specific individuals in the sample may have "flown under the radar" so to speak. It is quite possible that in addition to this substantial proportion of respondents exhibiting PTSD, a large percentage of those remaining exhibited partial PTSD and are currently manifesting symptoms of significant distress. It is worthwhile to note that only 3 ECPs in the entire sample reported being symptom-free.

It is difficult to compare the percentage reported to those reported in other studies because of the vastly discrepant cut-offs employed. It is clear that the use of discrepant cut-offs presents a dramatically different picture of PTSD across studies. A comparison of the percentages of the current sample exhibiting PTSD, according to the cut-offs specified in different South African studies, provides a dramatic illustration of how vastly incomparable these PTSD percentages are across studies. If Esprey's (1996) particularly stringent cut-offs are applied, only 9% of the present sample would classify as exhibiting PTSD. On the other hand, if Kopel and Friedman's (1997) and Viedge's (2001) liberal cut-offs were utilised, an astounding 48% of the sample would qualify. The discussion has served to highlight the discrepant use of cut-offs across South African studies. This particular issue is not confined to South African studies, however. An examination of the international literature presents a similar picture. Cut-offs utilised in international studies vary from liberal overall scale cut-offs of 19 (Bryant & Harvey, 1996) to more conservative overall scale cut-offs of 51 (Birmes et al., 2000).

Although the wide usage of the IES is an advantage as far as comparison across studies is concerned, the discrepant translation of the IES scores into a meaningful percentage cripples such comparison. When cut-offs employed are so discrepant, the percentages reported cannot be treated with anything but skepticism. The researcher elected to employ Neal et al.'s (1994) cut-offs for classification of PTSD as these have been statistically shown to correctly classify an impressive 89%, with an error rate of only 11%. Neal et al. (1994) found that in spite of arguments against the use of the IES as a dichotomous measure for diagnostic purposes (Joseph, 2000), the application of this cut-off correctly classified PTSD with far greater accuracy than measures traditionally employed for diagnostic purposes, namely the MMPI-PTSD scale (Keane, Malloy & Fairbank, 1984 in Neal et al., 1994) and the CAPS-1 (Weathers & Litz, 1994, in Neal et al., 1994). Such statistical substantiation allows for a certain amount of confidence in the cut-off employed in the present study, as opposed to the ostensibly arbitrary choice of cut-offs evidenced in many others.

A further complexity involved in the diagnosis of PTSD, and the use of the RIES for this purpose specifically, is the fact that although as a measure of PTSD the RIES is

comprehensive, assessing as it does all three symptom clusters, as a diagnostic tool it is no improvement on the original IES. The RIES remains reliant on IES cut-offs for the purpose of diagnosing PTSD, and because of this the Increased Arousal sub-scale has no bearing on the diagnosis. Diagnosis of PTSD should adhere strictly to the DSM-IV diagnostic criteria. The RIES, although *measuring* the full range of symptoms and thereby accounting for the necessary criteria, is yet unable to *diagnose* on the basis of all these criteria. This is a fundamental limitation of the instrument as it stands. It is recommended that a study be undertaken to devise a valid cut-off for the Increased Arousal sub-scale to enable the instrument to perform to its full potential.

7.4 Social Support in the Sample

A relatively restricted range of scores was observed on the SS-A. Subjects in the sample reported moderate to high appraisals of being supported. There was a noteworthy difference (almost two standard deviations) in mean scores on the family and friends subscales. Respondents tended to perceive themselves as more esteemed and cared for by family members than they did by friends. A similar finding was evident in an earlier study by the researcher (Basedau, 1999). In this earlier study among police officers a difference of approximately two standard deviations was also evident between the SS-A (Family) and SS-A (Friends) subscales, with subjects perceiving more care and support from family members. The mean evidenced in the present study for the SS-A total (72.22) is similar to those reported in other studies that have employed the instrument. O'Reilly (1995) reported an overall mean of 66 among psychiatric inpatients, and Monahan and Hooker (1997) found an overall mean of 70 among caregivers to Alzheimers and Parkinson's sufferers. The researcher observed a similar mean of 71 in an earlier study (Basedau, 1999).

A wider range of scores was evidenced on the SS-B (Family) and the SS-B (Friends) subscales. Some respondents perceived supportive behaviours from friends and family to be relatively unavailable, whilst others reported that these behaviours were very available. The distribution of scores on the SS-B (Family) subscales appeared to be skewed towards the top end of the range. This suggests that the majority of the sample reported high levels of

perceived supportive behaviours from family, but that a few individuals reported very low scores, drawing the minimum score down. Scores on the NOS ranged from low to high and appeared quite evenly distributed. What this suggests is that certain members of the sample had predominantly negative network orientations, whilst others had predominantly positive orientations.

7.5 Internal Reliability of the Scales Employed

The internal reliability of all of the scales and subscales employed for the present study emerged as very good. According to Anastasi and Urbina (1997) a Cronbach alpha co-efficient over .7 is evidence of good internal reliability. The Cronbach alpha's observed for the scales and subscales employed in the present study all fell on or above .89. This indicates good internal reliability across the board and provides a measure of confidence in the findings of the present research.

7.6 Biographical Variables

ANOVA and 't'-tests were conducted to examine the difference between the scale scores according to certain of the biographical variables. No significant differences in exposure ratings were observed according to any of the biographical variables. No differences were observed between the appraisal of being supported, the perception of available supportive behaviours from family and friends, or network orientation according to any of the biographical variables. No significant differences emerged between the groups with regards to symptoms of PTSD either. The following discussion examines the absence of a significant difference between RIES scores according to the biographical variables investigated.

7.6.1 Gender, Age, Marital Status and Rank

No significant differences emerged between the male and female respondents in respect of their symptom levels. According to Wolfe and Kimmerling (1997) gender differences are

widely reported in the literature. They suggest that women generally report higher levels of symptoms than men. This was not the case in the present study. The present study supports the findings of studies such as Carlier et al. (1996), Carlier et al. (1997) and Pole et al. (2001) which report no significant differences between symptom levels in men and women.

No significant differences emerged between the symptom levels across the different ages of the respondents either. Robinson et al. (1997) found age to be the second most important predictor of PTSD in their sample of police officers. This was not the case in the present study. The present study supports the findings of studies such as Carlier et al. (1996) and Carlier et al.'s (1997), which found no relationship between age and symptoms of PTSD. Similarly, no differences emerged between the symptom levels of the different categories of marital status or position. This is in line with the findings of studies such as Carlier et al.'s (1997) that have found no relationship between marital status or rank and symptoms of PTSD.

7.6.2 Prior Counselling

Surprisingly, no significant differences were found between the symptom levels of those that had received prior counselling and those that had not. This may be a function of the fairly loose definition of counselling employed for the present study. A respondent qualified for the "counselling" group if he/she had attended a minimum of one session with a psychologist, counsellor or pastor. There was no specification regarding the duration or timing of the counselling received. It may be that certain of the respondents falling within the counselling group had received as little as one session of debriefing which had taken place a long time ago perhaps. It is also important to consider that the ECPs that sought counselling were likely to have been the ones displaying the most severe symptoms. The benefits of the counselling they received may be evidenced in the fact that their scores are not significantly higher than those reported by the "no counselling" group.

7.6.3 Station

No significant differences were observed between the mean RIES scores of the respondents from different stations. The same was found in the comparison of mean RPWEC scores between the various stations. The absence of a significant finding may in part reflect the use of the conservative Bonferroni correction employed to control for Type I error when conducting multiple 't'-tests. The rejection of the null hypothesis in the ANOVA suggests that significant differences may in fact have been present, but by being appropriately cautious and employing a Bonferroni correction, it was not possible to isolate where these differences might be. The discussion is thus limited to observable, rather than statistical, differences. Kempton Park evidenced the highest mean RIES score (49.20), Olivedale the second highest (44.75), Germiston/Boksburg third (40.90), Union/Mulbarton fourth (39.20) and Krugersdorp fifth (36.20). These mean scores all fall above Neal et al.'s (1994) cut-off of 35 and suggest that significant symptoms of PTSD are present at these stations. The lowest score reported at Kempton Park was 18, suggesting that the least symptomatic respondent still reported significant distress. It is important to note that a 95% response rate was evidenced at this particular station, suggesting that the distress reported in the questionnaires is fairly representative of the population of Kempton Park ECPs.

It is important to acknowledge the fact that respondents represent only a sample of the broader station populations from which they were drawn. Although an impressive response rate of 54% was evidenced for the entire sample, varying response rates were evidenced for each of the stations. Almost all of the personnel (95%) at Kempton Park chose to participate in the study, suggesting that the mean reported for the sample reflects the population mean for the station almost exactly. At stations such as Olivedale and Sunninghill/Midrand, response rates of only 30% were evidenced. The difference in these response rates may be accounted for by the fact that these two stations are larger by comparison, and ECPs were addressed here in larger groups. The researcher observed that the smaller and more intimate the group of ECPs addressed, the more likely it was that a good response rate would be observed.

When the response rate is less than a third of the total population of that particular station then it opens up cause for concern regarding how representative the sample is of that particular station population. If factors extraneous to the study were impacting on the self-selection of these participants one would expect to observe some sort of pattern of participation, however. There is no apparent pattern to the self-selection of respondents at Olivedale and Sunninghill/Midrand, however, as each sample presents a very different picture of its respective population.

One might argue that it is possible that the respondents most traumatised would be most reluctant to participate, being more inclined to enact symptoms of avoidance. One might just as easily propose that more traumatised subjects may be more inclined to participate because they perceive the value of the research. The sample of respondents from Olivedale evidenced one of the highest levels of PTSD, whilst the sample from Sunninghill/Midrand evidenced one of the lowest. It seems unlikely that only the more traumatised chose to participate at Olivedale, and only the least traumatised chose to participate at Sunninghill/Midrand. Nevertheless it should be borne in mind that more confidence is placed in the representativeness of the samples, as a reflection of their respective station populations, drawn from Kempton Park (95% response rate), Benoni (89%) and Roodepoort (75%).

The high response rate evidenced at Kempton Park, coupled with the highest reported levels of PTSD, suggests that the ECPs at this station are manifesting significant symptoms of PTSD and that the least symptomatic ECP at this station is exhibiting significant distress. Also of concern is Olivedale. Although the response rate evidenced was only 30%, of those that chose to participate the least symptomatic ECP reported a score of 16 on the RIES, which is suggestive of substantial distress. Wider ranges of scores were observed at stations such as Benoni, Union/Mulbarton, Milpark/Garden City, Roodepoort and Germiston/Boksburg, with some respondents reporting to be relatively symptom-free, and others reporting significant levels of PTSD.

7.6.4 Length of Service

The correlation conducted between years of experience in the paramedical field and symptoms of PTSD yielded interesting findings. A significant positive correlation ($p < 0.05$) was found, suggesting that the longer the ECPs in the sample had been in the paramedical field, the higher their levels of PTSD symptoms. This differs to findings by Robinson et al. (1997) reporting that the less experienced police officers in their sample reported higher concentrations of symptoms. This also differs to findings by Beaton et al. (1999), which failed to evidence any relationship between length of service and PTSD in firefighters. The findings of the present study support the findings of Moran and Britton (1994) which reported that length of service as a firefighter was significantly positively associated with both severity and length of reaction to a traumatic incident. It is likely that this finding reflects to some extent the effects of what Straker et al. (1987) refer to as "continuous traumatic stress". Continuous, repetitive and cumulative exposure over a number of years arguably resulted in more severe PTSD in the more seasoned ECPs in the sample. This contention is supported by the fact that a significant positive correlation ($p < 0.05$) was also evidenced between impact of exposure and length of service. It would appear that a three-way relationship is at play, with length of service being associated both with reports of more negative exposure and with more severe symptoms of PTSD. It is this cumulative traumatic stress effect over time that may account for the high job turnover rate evidenced in the organisation. The sample demographics show that some ECPs do choose to remain in the profession for a number of years, but this finding indicates that they do so at great cost.

7.7 Relationships between the Social Support Dimensions

In accordance with expectations, the social support measures were all significantly positively correlated ($p < 0.01$) with one another. Similar findings were reported by Vaux, Phillips et al. (1986). They propose that individuals who feel supported are more inclined to perceive the availability of supportive behaviours from others and to exhibit positive network orientations. Conversely, they argue, individuals who do not feel supported are less inclined to perceive the availability of supportive behaviours from others and to exhibit

negative network orientations (Vaux, Phillips et al., 1986). These relationships serve to suggest that the dimensions of social support measured by each scale do in fact converge with one another under the broad construct. Relationships were expected between the scales as they testify to the scales' convergent validity and suggest that each does in fact measure an element of social support. Discriminant validity was not assessed directly in the present study, but a number of different relationships emerged between the different social support scales and the variables of exposure and PTSD examined. This suggests that although correlating highly with one another and measuring elements of the same construct, there is still sufficient reason to discriminate between them. Essentially what is argued is that they are *related*, but not the *same*.

7.8 Relationship between Exposure and PTSD Symptoms

A significant positive correlation ($p < 0.01$) was observed between exposure to events rated as having a negative impact and symptoms of PTSD. This relationship was expected, based on the literature and the diagnostic criteria which specify that exposure must be present for diagnosis of PTSD (APA, 1994). According to Green (1994, p.353) "the primary risk factor that has been associated empirically with the development of PTSD diagnosis is the level or severity of exposure to stressors". Certain studies have reported findings that contradict this intuitive relationship, however. Beaton et al.'s (1999) study constitutes a noteworthy example. These researchers found no relationship between exposure and symptoms of PTSD. What is important to take account of is the fact that Beaton et al. (1999) employed an objective measure of exposure rather than measuring the subjective appraisal of the impact of that exposure. If the same had been done in the present study, a similarly nonsignificant relationship would have been observed. The score obtained in the present study of the occurrence of the potentially traumatic events described in the RPWEC did not correlate significantly with any of the other variables examined, including symptoms of PTSD. The impact of that exposure, as rated by the respondent, however, emerged as significantly correlated with symptoms of PTSD. This finding supports the widely accepted appraisal model of traumatic stress (Janoff-Bulman, 1985) and a fundamental tenet of Green et al.'s (1995) psychosocial model: that traumatic events are defined not only by event variables,

but rather by a dynamic interaction between the event variables and the individual's subjective appraisal of them.

It is important to note that the nature of the relationship between exposure and PTSD cannot be assumed to be causal or even linear. Although exposure may be assumed to precede PTSD, as described in the diagnostic criteria (APA, 1994), it is possible that the relationship is reciprocal (Gibbs, 1989). Marmar et al. (1996) found that among the emergency services personnel examined in their study, those in greater distress tended to report higher exposure. They argue that symptoms of PTSD may affect subjects' appraisal of the impact of prior exposure (Marmar et al., 1996). This is supported by authors such as Green (1993, p.141) who contend that "the subject's present adjustment to the traumatic event colours his/her recall about the detail of what happened". It is clear that the relationship between exposure and PTSD is a complex one, and thus no causal claim is ventured in the present study.

7.9 Relationship between Social Support and Exposure

The correlations computed between the social support measures and exposure reveal interesting results. Only the SS-B (Friends) and NOS emerged as significantly negatively correlated ($p < 0.01$) with exposure to events rated as having a negative impact. The SS-A and SS-B (Family) did not emerge as significantly correlated with exposure. What this suggests is that the perception of available supportive behaviours from friends and a positive network orientation are associated with lower levels of negatively rated exposure. The appraisal of being supported and the perception of available supportive behaviours from family, however, appear not to be significantly related to levels of exposure in the sample. One possible explanation for this is that following high levels of exposure, support from friends, or the perception of support from friends, may dwindle. Wolfe and Kimerling (1997, p.207) propose that "individuals in the larger social network often respond to the trauma survivor's reluctance to disclose aspects of the trauma with feelings of estrangement or even resentment". The nature of the exposure these ECPs confront on a daily basis is often unpalatable and traumatic to others. They may encounter friends withdrawing from interaction with them because of the sorts of things they feel compelled to talk about and the

odd hours they keep, or they may withdraw for fear of repulsing others. It is arguable that family members are less inclined to withdraw support than friends, and may support the ECP in spite of his/her withdrawal or the demands of his/her shiftwork. Family support is arguably a more stable form of support over time whereas friendships may be more fragile.

It is also possible that following exposure ECPs may develop more negative network orientations. They may develop what Bonifacio (1991) refers to as "malignant cynicism" and believe that no one can understand their experiences. A number of ECPs in the sample expressed in informal conversation with the researcher that they find it difficult to engage with others outside of their work context because they "just don't understand". This particular phenomenon has been reported in other South African studies (Davidson, 2001; Davies, 2001). An ex-paramedic interviewed in Davies' (2001, p.161) South African study, referring to his work, stated: "I don't think that I would do anybody any justice by telling them about it". He added that "my interpersonal skills with people just deteriorated to such an extent that I didn't want to be with anyone. I wanted to be left alone so that I wouldn't have to explain anything". What this suggests is that repeated exposure may result in a change in perception of the value of support. Those friends and family offering support may be perceived as placing demands on the already emotionally overburdened ECP and this support may be rejected. Also plausible is the possibility that a negative network orientation or the perception of a lack of available supportive behaviours from friends may lead to a more negative appraisal of the impact of events.

7.10 Relationship between Social Support and PTSD Symptoms

All four of the social support scales employed in the present study, the SS-A, the SS-B (Family), the SS-B (Friends) and the NOS, correlated significantly ($p < 0.01$) and negatively with symptoms of PTSD. What this serves to suggest is that feeling cared for and esteemed, perceiving the availability of supportive behaviours from friends and family, and displaying a positive network orientation were all related directly to fewer symptoms of PTSD in the sample. This supports the main effect hypothesis. Similar findings have been reported by McCammon et al. (1988) with a sample of emergency workers, and in South African studies

such as Allen and Ortlepp's (1998) and Basedau's (1999), which found a similar main effect in a sample of security personnel and police officers respectively. All four social support measures correlated significantly with symptoms of PTSD and no significant differences were observed between the relationships of the different measures employed.

The examination of the correlations between the various SS-A and SS-B subscales and the RIES revealed interesting findings. All of the SS-A and SS-B subscales emerged as significantly negatively correlated with symptoms of PTSD, but for one: the SS-A (Family). This suggests that the appraisal of being supported by family was not significantly related to symptoms of PTSD in the sample. What is particularly interesting is that this same pattern was observed in an earlier study (Basedau, 1999). The researcher found that although the SS-A total score was significantly negatively correlated with symptoms of PTSD in the sample of police officers employed, the SS-A (Family) subscale did not produce a significant correlation with symptoms of PTSD (Basedau, 1999). This suggests that the main effect may hold for the appraisal of being supported by friends, but not for the appraisal of being supported by family.

It is possible that the appraisal of support from family is independent of symptoms of PTSD, whereas the appraisal of support from friends and others is more susceptible to the effects of PTSD. In keeping with what was suggested above, it is possible that the emotional numbing and social withdrawal that often accompany PTSD may impact on friendships more than on enduring familial relationships. Also interesting to note is that although the SS-B (Family) scale did not correlate significantly with exposure to events rated as having had a negative impact, one of its subscales did. The SS-B (Family) Practical Assistance subscale did correlate significantly and negatively with exposure, suggesting that this particular form of support from family may be perceived as lacking following high levels of exposure. Another explanation might be that following exposure this particular form of support may be perceived as a stressor in itself and may thus be rejected. This was observed in Murphy's (1988) study of disaster victims. She states that the receipt of practical assistance "was a stressful process in and of itself and ….it had very little positive impact on the negative effects of the disaster" (Murphy, 1988, p.158).

7.11 Impact of Social Support within the Exposure-PTS Relationship

The findings of the correlation analyses supported the main effect hypothesis. A test of the buffering hypothesis was conducted using the technique of partial correlation. By observing the strength of the correlation between exposure and symptoms of PTSD described above and by comparing it to the strength of that same relationship when the effects of social support appraisal, perceived availability of supportive behaviours and network orientation were statistically controlled, the buffering hypothesis was tested. None of the social support measures appeared to operate as a significant buffer in the relationship between exposure and PTSD symptoms in the sample. A second order partial correlation was conducted to observe whether a combination of social support variables together had a significant impact. This impact too proved insignificant. No evidence was found for the buffering hypothesis.

A similar finding was reported by Esprey (1996). She tested the buffering hypothesis among South African township residents exposed to civil unrest and also employed the technique of partial correlation. Esprey (1996) also failed to evidence a significant difference when her measure of support was partialled out of the exposure-PTS relationship. The same finding emerged from an earlier study by the researcher with a sample of police officers (Basedau, 1999). Both of these studies failed to find evidence for the buffering hypothesis.

Cook and Bickman (1989) offer an explanation for why they failed to find evidence of a buffering effect in their study examining victims of a disaster. They propose that the severity of the stressors involved in the development of PTSD may "override" the beneficial effects of social support. The majority of studies that find evidence for the buffering hypothesis are those that examine more generic stressors and not those examining PTS. In fact, a close review of the studies extolling the buffering effect of social support reveals for the most part that they examined its role in the stressor-strain relationship, and not the exposure-PTS relationship per se (Cobb, 1976; Flannery & Weiman, 1989 in Flannery, 1990; Kirmeyer & Dougherty, 1988; Pines, 1982; Sandler & Barrera, 1984; Wilcox, 1981). Those studies

examining the buffering role of social support in the exposure-PTS relationship, have for the most part, found no evidence of it (Basedau, 1999; Cook & Bickman, 1990; Esprey, 1996).

In situations of traumatic stress, exposure may be too powerfully predictive of symptoms of PTSD for a variable such as social support to intervene. It is possible that this is even more the case in situations of continuous exposure. For the ECPs in the present study, the police officers employed in an earlier study (Basedau, 1999), and the township residents examined in Esprey's study (1996), the exposure measured may have been so relentless as to preclude any interruption in which social support could take effect. Robinson et al. (1997, p.837) argue that "it is unlikely that any coping skill could defend against chronic exposure to traumatic stress". The implicit assumption of Green et al.'s (1985) psychosocial model is that there is a period of recovery in which factors such as social support play a significant role. It does not account for situations of continuous exposure where it is difficult to identify any discrete recovery period. Cohen and Wills (1985) have proposed that the buffering hypothesis is evident even in the presence of "chronic strain". Their argument may be limited to the impact of social support within a more generic stressor-strain relationship, however. The findings of the present study suggest that this argument may not apply to the exposure-PTS relationship.

Interesting to note is that not only did the buffering hypothesis not hold in the present study, the statistical control of each of the social support variables, contrary to expectation, actually *weakened* the exposure-PTS relationship, albeit non-significantly. If the buffering hypothesis were to have held the statistical control of the social support variables should have strengthened the exposure-PTS relationship. Esprey (1996) found the same reverse-buffering effect, but it also failed to prove significant. What the findings of the present research and Esprey's (1996) study suggest is that, albeit non-significantly, social support may enable, rather than disable, the relationship between exposure and symptoms of PTSD. This contradicts the fundamental tenets of the buffering hypothesis.

The fact that all of the social support facets examined correlated with symptoms of PTSD, and the fact that the perception of available support from friends and network orientation

also correlated with exposure, preclude the classification of social support as a moderator within the exposure-PTS relationship (Baron & Kenny, 1986). The fact that when the social support facets examined were statistically controlled, the exposure-PTS relationship weakened, albeit non-significantly, suggests that social support may in fact behave as a mediator, and not a buffer, in this relationship. This finding did not emerge as significant, but does perhaps provide pause for thought, and a possible research question for future research.

7.12 Relative Contributions of Exposure and Social Support in Predicting Variance in PTSD Symptoms

Multiple regression equations were run to observe the relative contributions of exposure, appraisal of being supported, perception of available supportive behaviours from family and friends, and network orientation in predicting variance in symptoms of PTSD. This allowed for an examination of the relationships between the variables when examined together and provided an indication of the relative contributions of each when examined in relation to symptoms of PTSD. Exposure emerged as the only variable to significantly predict variance in symptoms of PTSD. Although not quite reaching significance at the 0.05 level, network orientation and the perception of available supportive behaviours from friends remained in the model. This suggests that they contribute to the prediction of variance in symptoms of PTSD, albeit just below significance, whereas the appraisal of support from others and the perception of available support from family were found not to contribute.

This finding suggests that although each social support measure evidenced a strong individual correlation with symptoms of PTSD, when examined together with exposure, their relative contribution to predicting variance in symptoms of PTSD is shown to be fairly small. This supports the argument made earlier in this discussion regarding the strength of the exposure-PTS relationship. Exposure appears to be strongly predictive of variance in symptoms of PTSD, and this may leave little room for variables such as social support to contribute or intervene. It is thus not surprising perhaps that no buffering effect was observed.

It is important to note that, unlike correlation analyses, multiple regression equations carry with them the implicit assumption of a causal direction. This implicit assumption is made in the classification of variables as "independent" or "dependent". It is acknowledged that this is a problematic assumption to make in light of the reciprocal relationships likely to be present between the variables. In light of this acknowledgement it may be prudent to consider that the classification of symptoms of PTSD as the dependent variable in this particular regression equation may account for why the social support variables examined evidenced such weak predictive power. The very strength of their individual correlations with symptoms of PTSD, when compared to their lack of predictive power in the regression equation, suggests that it is possible that symptoms of PTSD predict levels of social support and not vice versa.

It is quite plausible that, as Wolfe and Kimerling (1997, p.207) propose, "in relationships with both family and friends, the manifestations of PTSD often erode existing support systems". Keane et al.'s (1985) longitudinal study of social support among Vietnam veterans supports this contention. They found that symptoms of PTSD preceded a substantial decline in social support among the subjects with PTSD in the sample, and not the other way around (Keane et al., 1985). This would explain why the present study failed to evidence any buffering effect. The buffering hypothesis holds that social support somehow intervenes in the relationship between exposure and PTSD. It may be that symptoms of PTSD in fact intervene in the relationship between exposure and levels of social support. Alternatively, the relationship between social support and PTSD may be independent of the relationship between exposure and PTSD.

7.13 Relationship between the Modes and Sources of Social Support and PTSD Symptoms

A multiple regression was conducted to examine the relative contributions of the various modes and sources of support in predicting variance in symptoms of PTSD. The perception of available emotional support from friends emerged as the only significant ($p < 0.0001$)

predictor of variance in symptoms of PTSD. Variance in this particular mode and source of support predicted an impressive 20% of the variance in symptoms of PTSD. What this suggests is that subjects in the sample who perceived a lack of available emotional support from friends were likely to exhibit higher levels of PTSD symptoms. It is important to keep in mind that the relationship between PTSD and social support is likely to be a reciprocal one (McFarlane, Norman, Streiner & Roy, 1983, in Barrera, 1986; McDonald et al., 1999). No causal claim is ventured. It is apparent from the data, however, that the perceived availability of emotional support from friends is related significantly to symptoms of PTSD.

It may be that the symptoms of PTSD alienate friends and cause them to withdraw emotionally. The provision of emotional support, defined by Vaux (1987) as the expression of concern, affection or caring and the provision of comfort or encouragement, would certainly involve the essential act of listening. According to Paton and Stephens (1996) the sorts of things that members of critical occupations are exposed to may be particularly upsetting for others to listen to. They propose that "listening to someone who needs to share their traumatic experiences often and in detail is burdensome and often avoided" (Paton & Stephens, 1996, p.184). Due to the nature of the shifts these ECPs work, it may be difficult to maintain friendships outside of work. Friendships may be forged and relied upon within the emergency care profession, which may offer another explanation for the relationship between perceived lack of emotional support from friends and PTSD in the sample. Paton and Stephens (1996) propose that colleagues already burdened with the effects of their own exposure may be disinclined to offer emotional support, as this may activate their own, often suppressed, emotion. What may be described by this particular finding is a tragic emotional withdrawal of friends and colleagues following traumatic exposure in the sample. This may contribute to the development of PTSD symptoms, or it may follow the development of PTSD symptoms.

The findings of Keane et al.'s (1985) longitudinal study of social support among Vietnam veterans provides an interesting contribution to this particular causal debate. Keane et al. (1985) found that levels of social support, although reported by both the PTSD subjects and non-PTSD subjects in their study as being roughly equal prior to exposure, appeared to

decline over time for those in the PTSD group. Particularly noteworthy is the finding that of the five modes of support measured, emotional support evidenced the most dramatic decline over time (Keane et al., 1985). This may be exactly what is illustrated in this social support subscale regression model. Subjects in the sample exhibiting high levels of PTSD may be more inclined to withdraw emotionally from friends over time, or their friends may be more inclined to withdraw their emotional support. Alternatively, those exhibiting symptoms of PTSD may feel more isolated in their experience and may be more inclined to *perceive* a lack of emotional support from friends. It is also possible that those in the sample perceiving a lack of emotional support from friends may have been more vulnerable to developing symptoms of PTSD.

To describe the particular nature of the relationship between the perception of available emotional support from friends and symptoms of PTSD is beyond the scope of this investigation, but it is clear that this particular mode and source of support demands attention, both in the literature and in proposed interventions. It is important to note at this juncture that the social support subscale regression model may not have been entirely stable, as the number of predictors in the model, according to Green's (1991) formula, called for a sample size greater than that available for the present study. The minimum sample size needed to guarantee stability in the social support subscale regression model, according to Green's (1991) criteria, would have been 154. What this suggests is that the findings regarding the relative contributions of the various modes of social support in predicting variance in symptoms of PTSD, albeit interesting, do need to be regarded with caution.

7.14 Conclusion

This chapter has served to present a discussion of the findings of the research and to contextualise these within the literature. The following chapter offers a discussion of the limitations of the study and presents recommendations for future research and proposed interventions.

CHAPTER 8: CONCLUSION

8.1 Introduction

The purpose of this chapter is to reflect on the research study and to present the concluding thoughts that derive therefrom. This chapter seeks to offer a critical examination of the limitations of the research, to suggest directions for future research and to propose certain practical interventions among ECPs that emerge from the findings.

8.2 Limitations of the Research

A watertight study in the field of the behavioural sciences is an unattainable ideal. The present study falls short of this ideal in a number of areas and it is the purpose of this section to acknowledge these limitations. Firstly, it should be acknowledged that the sample employed was neither a randomly selected nor representative one. It was selected on the basis of convenience and consisted of ECPs who volunteered to participate. The volunteer nature of the sample brings into question the external validity of the results, which are based on the responses of a group of ECPs who chose to participate in the study. The specific nature of the ECPs who chose not to participate in the study is unknown. The response rate evidenced was an impressive 54%, but this does still leave 46% of the total population approached who chose not to participate. It is possible that volunteering to participate was somehow linked to certain of the variables, and that certain types of ECPs evidencing a specific type of exposure pattern, levels of social support or PTSD symptom pattern, chose not to participate.

Secondly, the present study was both cross-sectional and retrospective in nature. The cross-sectional design has not allowed for any attributions regarding the causal direction of relationships investigated. Instead only associations have been ventured. Given the uncertainty surrounding the exact causal direction of the relationships between the variables under investigation, longitudinal designs in this area have much to offer.

The retrospective nature of the study is also an important constraint. The data obtained was based on self-report, a method widely employed, but also widely documented to be problematic (Rosenthal & Rosnow, 1991). It is particularly problematic in the field of trauma where attributions and appraisals of the impact of trauma and the severity of symptoms has been shown to be heavily dependent on an individual's level of distress and disposition at the time of filling in the questionnaire (Green, 1993). Also important to consider is the fact that the length of time between the occurrence of a specific traumatic event and the respondent's filling out of the questionnaire was not measured in the present study. For the subjects in the sample who had been in the paramedical field for over 20 years it is quite plausible that certain of the RPWEC impact ratings were offered for events that had occurred a decade or two prior. This brings the integrity of the appraisal, reliant as it is on memory, into question (Paton, 1994). This particular constraint is common among studies examining continuous exposure. Studies measuring the effects of discrete traumata, such as disasters, are better able to account for the time elapsed between exposure and measurement.

The limitations of administering a questionnaire in English within a country boasting 11 official languages should also be acknowledged. Although the majority of the sample (57%) cited English as their first language, for a substantial portion (32%) English was clearly not. For these subjects English may have been a second or even third language. Time constraints did not permit the translation of the questionnaire. It was, furthermore, not considered a viable option given the number of possible languages represented. This limitation is duly noted and the implications it has for the validity of the findings of the present study are acknowledged.

Another important limitation of the present study is the fact that it did not explicitly account for either organisational stressors or traumatic stressors that occurred outside of the work context. As noted previously, it is particularly difficult to distinguish organisational stressors and work-related traumata in critical occupations as they are inextricably linked (Paton & Smith, 1996). In the present study, organisational stressors may plausibly have contributed to the symptom levels measured, although these stressors themselves were not measured.

Similarly it is quite likely, given the number of personal traumata reported in the qualitative section of the RPWEC, that a number of traumata unrelated to work may have impacted significantly on the symptom levels reported. These were not measured in the present study. What is suggested is that organisational stressors and personal traumata may have acted as extraneous variables impacting on symptom levels.

8.3 Recommendations for Future Research

The cross-sectional and retrospective nature of the present study limits the inferences possible regarding the causal order of the variables examined. Future research might elucidate the exact direction of the relationships between exposure and PTSD symptoms, between exposure and social support, and between social support and PTSD symptoms respectively, by employing a longitudinal, prospective design instead.

The findings of the present study regarding the role of social support within the exposure-PTS relationship present a complex picture. It is evident that different conceptualisations and operationalisations of social support evidence different roles within the exposure-PTS relationship. Further examination of the different facets, modes and sources of support available is needed to better understand the role of social support in the exposure-PTS relationship.

The findings of the present research are limited to the sample from which they were derived and extrapolated for inferences regarding the South African ECP population. It would be beneficial to examine the role of social support within the exposure-PTS relationship among different populations. It is possible that a buffering effect may be evidenced among populations exposed to discrete, rather than continuous traumata. It would also be beneficial to explore whether the findings of the present study would be consistent for other critical occupations.

It is suggested that future studies pay careful attention to their use of the terms “mediator” and “moderator” in discussion of the buffering role of social support within the stressor-

strain relationship. These terms have strict statistical parameters that do not necessarily apply to the role of social support in either the stressor-strain or exposure-PTS relationship. The present study found no evidence for the buffering hypothesis, but instead found social support to behave more as a mediator, albeit non-significantly. This counterintuitive finding begs further investigation. Future studies may explore the possibility that social support enables, rather than disables, the exposure-PTS relationship.

The pervasive use of discrepant IES cut-offs for the classification of PTSD is quite clearly a problem. Although a significant advantage to using the IES is the fact that it is widely employed, comparison across studies is crippled by the use of discrepant cut-offs. Studies such as Neal et al.'s (1994) have been conducted for the purpose of discerning optimal cut-offs. It is recommended that more attention be afforded the choice of IES cut-offs in research and that this choice be explicitly substantiated. Consensus across studies regarding the use of IES cut-offs will allow for meaningful comparison. It is also recommended that a study be undertaken to discern cut-offs for the RIES. Although measuring the full range of symptoms, diagnosis is based on the Intrusion and Avoidance subscales alone. The RIES is still reliant on original IES cut-offs and is thus not performing to its full potential.

8.4 Recommendations for Interventions among ECPs

The present research sought to identify the types of events that appear to have had the most negative impact on the ECPs in the sample. The findings of this investigation indicate those events that may be regarded as "high risk" in the course of an ECP's duties and should be afforded particular attention. The events found to exert the most negative impact in the present study were rendering aid to a seriously abused child, assisting at a paediatric drowning, dealing with equipment failure or the incompetence of others, witnessing the death of a coworker, assisting a sexual assault victim, rendering aid to a seriously injured child, observing a coworker being harmed and receiving inadequate information when dispatched on a call. Events involving children appear to be particularly traumatic. Also significant are the predominantly organisational stressors of dealing with equipment failure or incompetence, or receiving inadequate information

when dispatched on a call. Assisting a sexual assault victim and witnessing the injury or death of a coworker also appear to be particularly traumatic. The fact that hearing of the death or injury of a coworker was also rated as having a significantly negative impact on respondents, suggests that indirect exposure should not be overlooked as a source of PTSD symptoms.

It is recommended that the events identified in the present study as "high risk" be afforded added attention in training. Paton (1994) proposes that emergency services personnel are better able to cope with the demands of a potentially traumatic event if they are prepared in advance. The traumatic potency of these events is unlikely to be diffused entirely by training and preparation, as it is arguable that no amount of training can prepare one for the actual impact of events of this nature (Mitchell & Dyregrov, 1993). Training is unlikely to eliminate the posttraumatic reaction to these events, but it may serve to soften it. Lundin and Bodegard (1991) found that adequate training seemed to be associated with good coping strategies, including less preoccupation with unpleasant thoughts, in their sample of rescue workers. According to Paton and Stephens (1996, p. 174) "when exposure to events that may be construed as critical incidents becomes a professional reality, preparation and training should receive high priority on the trauma management agenda". Training might better equip ECPs for exposure to these particular incidents by enhancing a sense of competency and by identifying anticipated emotional reactions and normalising them in advance. Training might incorporate psycho-education regarding PTSD and it may also involve role-playing potentially traumatic scenarios with a view to discussing anticipated emotional reactions. This may serve to sensitise ECPs to the emotional impact of events in themselves and colleagues. Particular attention should be afforded those incidents identified in the present study as 'high risk'. These incidents may usefully be identified, role-played and discussed prior to active exposure. Also important might be the promotion of realistic expectations regarding the probable effectiveness of the ECP's role in each of these incidents (Paton & Stephens, 1996). It may also be prudent for supervisors and colleagues to be encouraged to be particularly vigilant for PTSD symptoms in ECPs following exposure to these incidents.

The findings of the investigation into the role of social support in the exposure-PTS relationship suggest that social support interventions may be particularly significant in alleviating the effects of traumatic exposure among ECPs. Paton and Stephens (1996) propose that emotional disclosure is particularly important in critical occupations as a means to activate traumatic memory and to desensitize and restructure traumatic experiences. They propose that emotional disclosure should be promoted in these occupations (Paton & Stephens, 1996). This particular recommendation is expanded upon by two of the findings of the present study. Firstly, the finding that emotional support from friends emerged as most related to symptoms of PTSD suggests that the receipt of emotional disclosure by supportive friends may indeed be particularly important in the exposure-PTS relationship. Secondly, the finding that a negative network orientation was also significantly related to both exposure and symptoms of PTSD suggests that beliefs regarding the value or danger of such disclosure may also be particularly important.

The finding that support, and particularly emotional support, from friends has a significant impact within the exposure-PTS relationship suggests that enhancing the emotional support available to ECPs from friends may be an important intervention. It may be helpful to promote both the mobilization and provision of this support. As a significant source of support from "friends" may indeed be provided by "colleagues" in the emergency care profession, it is suggested that the provision of peer counselling skills may be particularly beneficial. Paton (1996) proposes that peer counselling may be beneficial within critical occupations in light of a common belief that the seeking out of professional help is tantamount to admitting personal weakness or professional incompetence. Paton and Stephens (1996) argue that informal peer counselling is less threatening to self-esteem. Counselling skills such as empathic listening and reflection may better equip ECPs to emotionally support one another.

The finding that network orientation is also significantly associated with both exposure and symptoms of PTSD suggests that the mere provision of support is likely to be at best moderately helpful if attention is not afforded ECPs attitudes to utilising it. As noted by Paton and Stephens (1996, p.194), "it is only a worker's willingness to risk self-

disclosure that allows therapeutic support, and the prevailing attitudes observed in many studies of work "culture" and/or the operation of other social dynamics may inhibit this process". The "macho" culture prevalent in critical occupations that suggests that the disclosure or expression of emotion is a sign of personal weakness has been widely documented (Bryant & Harvey, 1996; Davies, 2001; Green, 1999; Kopel & Friedman, 1997; Lundin & Bodegard, 1991; McCammon, 1996; Paton & Smith, 1996). The counterproductive beliefs that such a culture promotes include the notion that admitting to an emotional reaction to a call is a sign of personal weakness and the belief that seeking help from colleagues or a professional is an indication that "you can't take the heat". It is suggested that the prevailing organisational attitudes that serve to maintain these counterproductive beliefs be addressed.

Paton (1996) suggests that appropriate modelling by supervisors is an important area of intervention. He proposes that by role modelling help-seeking behaviour and adaptive coping strategies supervisors can promote recovery and a supportive work environment (Paton, 1996). Organisational attitudes are not easily amenable to change, but their identification may lead to greater awareness and the possibility of generating alternative beliefs. A suggestion made by one of the respondents in an informal interchange with the researcher may warrant further thought as a helpful intervention. The respondent suggested that ECPs would be more amenable to utilising available counselling and support if it were normalised and promoted at a training level.

8.5 Conclusion

"Normal precautions against physical injuries and their treatment are considered to be covered by the use of protective clothing and devices, safety regulations in policies and training programmes, and instruction in response and first-aid procedures….Only recently, however, have administrators given attention to the potential for, and occurrence of, mental trauma that may result from service".

Dunning (1990, p.91)

The purpose of the present study was to investigate the incidence of PTSD in a sample of South African ECPs and to identify those events that appear to place them at most risk of psychological injury. It also sought to examine social support as a possible protective factor. The protective clothing these ECPs wear and the strict safety procedures they adhere to testify to the solemnity with which the physical risks of their work are treated. The large proportion of the ECPs examined in the present study found to be manifesting significant symptoms of PTSD testifies to the fact that the psychological risks involved in this work are also profound and that these demand more attention.

The findings of the present study serve to confirm what the social support theory already contends: that social support is a complex phenomenon. Although no causal relationships have been ventured, and thus no "protective" properties extolled per se, significant relationships did emerge between social support and both exposure and symptoms of PTSD. What this suggests is that social support may exert a significant impact on ECPs exposed to traumata and at risk of symptoms of PTSD. Further research is needed to elucidate the complexities of this impact, and to offer further contributions to the refinement of social support interventions among ECPs.

Recommendations for social support interventions have been ventured which, it is hoped, will be refined by future researchers and implemented to the benefit of the ECPs who are quite clearly not only at risk, but in the throes of psychological injury.

REFERENCES

Allen, S. and Ortlepp, K. (1998, February). Post-traumatic Stress in a South African Security Organisation. Paper delivered at Conference entitled "Police Officials as Victims of Trauma and Crises" - Technikon SA.

Amaya-Jackson, L., Davidson, J.R., Hughes, D.C., Swartz, M., Reynolds, V., George, L.K. and Blazer, D.G. (1999). Functional impairment and utilisation of services associated with posttraumatic stress in the community in Journal of Traumatic Stress, 12(4), 709-724

Ambulance murders: 3 found guilty. (2002, April). The Pretoria News, p. 5.

American Psychiatric Association (1980). Diagnostic and Statistical Manual of Mental Disorders (3rd ed). Washington: Author.

American Psychiatric Association (1994). Diagnostic and Statistical Manual of Mental Disorders (4th ed). Washington: Author.

American Psychiatric Association (2000). Diagnostic and Statistical Manual of Mental Disorders (4th ed, Text Revision). Washington: Author.

Anastasi, A. and Urbina, S. (1997). Psychological Testing (7th ed) New Jersey: Prentice Hall.

Andrews, B., Brewin, C.R. and Rose, S. (2003) Gender, social support, and PTSD in victims of violent crime in Journal of Traumatic Stress, 16(4), 421-427

Anonymous When God Made Paramedics Unpublished.

Antonovsky, A. (1993). The structures and properties of the Sense of Coherence Scale in Social Sciences Medicine, 36(6), 725-733

Armstrong, K., O'Callahan, W. and Marmar, C.R. (1991). Debriefing Red Cross disaster personnel: The multiple stressor debriefing model in Journal of Traumatic Stress, 4(4), 581-593

Baron, R.M. and Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations in Journal of Personality and Social Psychology, 51(6), 1173-1182

Barrera, M. (1986). Distinctions between social support concepts, measures, and models in American Journal of Community Psychology, 14(4), 413-445

Barrera, M. and Ainlay, S. (1983). The structure of social support: A conceptual and empirical analysis in Journal of Community Psychology, 11, 133-143

Barrera, M., Sandler, I.N. and Ramsay, T.B. (1981). Preliminary development of a scale of social support: Studies on college students in American Journal of Community Psychology, 9(4), 435-447

Basedau, N. (1999). Posttraumatic Stress Symptoms, Exposure to Traumatic Stressors, and Social Support in a Sample of Gauteng Police Officers Unpublished honour's research report, Wits University, Johannesburg.

Beaton, R., Murphy, S., Johnson, C., Pike, K. and Corneil, W. (1998). Exposure to duty-related stressors in urban firefighters and paramedics in Journal of Traumatic Stress, 11(4), 821-828

Beaton, R., Murphy, S., Johnson, C., Pike, K. and Corneil, W. (1999). Coping responses and posttraumatic stress symptomatology in urban fire service personnel in Journal of Traumatic Stress, 12(2), 293-308

Belle, D., Dill, D. and Burr, R. (1991). Children's network orientations in Journal of Community Psychology, 19, 362-372

Birmes, P., Warner, B.A., Callahan, S., Sztulman, H., Charlet, J. and Schmitt, L. (2000). Defense styles and posttraumatic symptoms in Journal of Nervous and Mental Disease, 188(5), 306-308

Blake, D.D., Cook, J.D. and Keane, T. (1992). Post-traumatic stress disorder and coping in veterans who are seeking medical treatment in Journal of Clinical Psychology, 48(6), 695-704

Bonifacio, P. (1991). The Psychological Effects of Police Work: A Psychodynamic Approach New York: Plenum Press.

Boscarino, J.A. (1995). Posttraumatic stress and associated disorders among Vietnam veterans: The significance of combat exposure and social support in Journal of Traumatic Stress, 8, 317-336

Bowman, M.L. (1999). Individual differences in posttraumatic distress: Problems with the DSM-IV model in Canadian Journal of Psychiatry, 44(1), 21-41

Brewin, C.R., Andrews, B. and Valentine, J.D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults in Journal of Consulting and Clinical Psychology, 68(5), 748-766

Brewin, C.R., MacCarthy, B. and Furnham, A. (1989). Social support in the face of adversity: The role of cognitive appraisal in Journal of Research in Personality, 23, 354-372

Brooks, N. and McKinlay, W. (1992). Mental health consequences of the Lockerbie disaster in Journal of Traumatic Stress, 5, 527-543

Bryant, R.A. and Harvey, A.G. (1996). Posttraumatic stress reactions in volunteer firefighters in Journal of Traumatic Stress, 9(1), 51-62

Buunk, B.P. and Hoorens, V. (1992). Social support and stress: The role of social comparison and social exchange processes in British Journal of Clinical Psychology, 31, 445-457

Card, J. (1987). Epidemiology of PTSD in a national cohort of Vietnam veterans in Journal of Clinical Psychology, 43, 6-17

Carlier, I.V. and Gersons, B.P. (1995). Partial posttraumatic stress disorder (PTSD): The issue of psychological scars and the occurrence of PTSD symptoms in Journal of Nervous and Mental Disease, 183(2), 107-109

Carlier, I.V., Lamberts, R.D., Fouwels, A.J. and Gersons, B.P. (1996). PTSD in relation to dissociation in traumatised police officers in American Journal of Psychiatry, 153(10), 1325-1328

Carlier, I.V., Lamberts, R.D. and Gersons, B.P. (1997). Risk factors for posttraumatic stress symptomatology in police officers: A prospective analysis in Journal of Nervous and Mental Disease, 185(8), 499-506

Cobb, S. (1976). Social support as a moderator of life stress in Psychosomatic Medicine, 38(5), 300-314

Cohen, S. and Wills, T. (1985). Stress, social support and the buffering hypothesis in Psychological Bulletin, 98, 310-357

Cook, J.D. and Bickman, L. (1990). Social support and psychological symptomatology following a natural disaster in Journal of Traumatic Stress, 3(4), 541-556

Coyne, J.C. and DeLongis, A. (1986). Going beyond social support: The role of social relationships in adaptation in Journal of Consulting and Clinical Psychology, 54(4), 454-460

Creamer, M., Burgess, P., Buckingham, W. and Pattison, P. (1993). Posttrauma reactions following a multiple shooting. A retrospective study and methodological enquiry in J.P. Wilson and B. Raphael (eds). International Handbook of Traumatic Stress Syndromes. New York: Plenum Press.

Danieli, Y. (1985). The treatment and prevention of long term effects and intergenerational transmission of victimisation: A lesson from holocaust survivors and their children in C. Figley (ed) Trauma and Its Wake, Vol 1. The Study and Treatment of Post Traumatic Stress Disorder. New York: Brunner/Mazel.

Davidson, M.L. (2001). Relations Between Post-Traumatic Stress Symptomatology, Disruptions in Cognitive Schemas and Coping in Emergency Care Practitioners Unpublished master's thesis, Wits University, Johannesburg.

Davidson, L.M., Fleming, I. and Baum, A. (1986). Post-traumatic stress as a function of chronic stress and toxic exposure. In C. Figley (ed) Trauma and its Wake: Volume II. Traumatic Stress Theory Research and Intervention. New York: Brunner/Mazel.

Davies, F.J. (2001). Towards Understanding the Ways In Which Paramedics Experience ans Cope with the Continuous Exposure to Trauma Unpublished master's thesis, Wits University, Johannesburg.

Deahl, M.P., Gillham, A.B., Thomas, J., Searle, M.M. and Srinivasan, M. (1994). Psychological sequelae following the Gulf War: Factors associated with subsequent morbidity and the effectiveness of subsequent debriefing in British Journal of Psychiatry, 165, 60-65

Donaldson, M.A. and Gardner, R. (1985). Diagnosis and treatment of traumatic stress among women after childhood incest in C. Figley (ed) Trauma and Its Wake, Vol 1. The Study and Treatment of Post Traumatic Stress Disorder. New York: Brunner/Mazel.

Dougall, A.L., Ursano, R.J., Posluszny, D.M., Fullerton, C. and Baum, A. (2001). Predictors of posttraumatic stress among victims of motor vehicle accidents in Psychosomatic Medicine, 63, 402-411

Dreeban, J. (1992). The Role of Pre-Service Interpersonal Experiences and Family Relationships in the Post-War Adjustment of Vietnam Veteran Nurses Unpublished doctoral thesis, Boston College, Boston.

Dunning, C. (1990). Mental health sequelae in disaster workers: Prevention and intervention in International Journal of Mental Health, 19(2), 91-103

Dyregrov, A., Kristoffersen, J.I. and Gjestad, R. (1996). Voluntary and professional disaster-workers and differences in reactions in Journal of Traumatic Stress, 9(3), 541-555

Eckenrode, J. (1983). The mobilization of social supports: Some individual constraints in American Journal of Community Psychology, 11(5), 509-528

Eranen, L. and Liebkind, K. (1993). Coping with disaster: The helping behaviour of communities and individuals in J.P. Wilson and B. Raphael (eds). International Handbook of Traumatic Stress Syndromes. New York: Plenum Press.

Esprey, Y. (1996). Post Traumatic Stress and Dimensions of Exposure to Violence: The Individual Response Unpublished master's thesis, Wits University, Johannesburg.

Everstine, D.S. and Everstine, L. (1993). The Trauma Response: Treatment for Emotional Injury New York: Norton.

Flannery, R.B. (1990). Social support and psychological trauma: A methodological review in Journal of Traumatic Stress, 3, 593-612

Folkman, S., Lazarus, R., Dunkel-Schetter, C., DeLongis, A. and Gruen, R. (1986). Dynamics of a stressful encounter: Cognitive appraisal, coping, and encounter outcomes in Journal of Personality and Social Psychology, 50(5), 992-1003

Foy, D.W., Carrol, E.M. and Donahoe, C.P. (1987). Etiological factors in the development of PTSD in clinical samples of Vietnam combat veterans in Journal of Clinical Psychology, 43, 17-27

Foa, E.B., Rothbaum, B., Riggs, D.S and Murdock, T.B. (1991). Treatment of post traumatic stress disorder in rape victims: A comparison between cognitive behavioural procedures and counselling in Journal of Consulting and Clinical Psychology, 59, 715-723

Figley, C. (1995). Compassion fatigue as secondary traumatic stress disorder: An overview in C. Figley (ed) Compassion Fatigue: Coping with Secondary Traumatic Stress in Those Who Treat the Traumatised. New York: Brunner/Mazel.

Freud, S. (1920). Beyond the pleasure principle in S. Freud On Metapsychology London: Penguin.

Frueh, B.C., Mirabella, R.F., Chabot, K. and Fossey, M.D. (1994). Chronicity of symptoms in combat veterans with PTSD treated by the VA mental health system in Psychological Reports, 75, 843-848

Garland, C. (1998). Thinking about trauma in C. Garland (ed). Understanding Trauma: A Psychoanalytic Approach London: Duckworth.

Genest, M., Levine, J., Ramsden, V. and Swanson, R. (1990). The impact of providing help: Emergency workers and cardiopulmonary resuscitation attempts in Journal of Traumatic Stress, 3(2), 305-313

Georgiou, I. (1997). Emergency Workers' Reactions to Traumatic Incidents. Unpublished master's thesis, Wits University, Johannesburg.

Georgiou, I. and Ortlepp, K. (1998, February). Emergency Workers' Reactions to Traumatic Incidents. Paper delivered at Conference entitled "Police Officials as Victims of Trauma and Crises" - Technikon SA.

Gersons, B.P. (1989). Patterns of PTSD among police officers following shooting incidents: A two-dimensional model and treatment implications in Journal of Traumatic Stress, 2, 247-257

Gerson, B.P., Carlier, I.V., Lamberts, R.D. and van der Kolk, B.A. (2000). Randomised clinical trial of brief eclectic psychotherapy for police officers with posttraumatic stress disorder in Journal of Traumatic Stress, 13(2), 333-347

Gibbs, M.S. (1989). Factors in the victim that mediate between disaster and psychopathology: A review in Journal of Traumatic Stress, 2(4), 489-514

Gibbs, M.S., Drummond, J. and Lachenmeyer, J.R. (1993). Effects of disasters on emergency workers in R.D. Allen (ed). Handbook of Post-Disaster Interventions California: Select Press.

Green, B.L. (1993). Identifying survivors at risk: Trauma and stressors across events in J.P. Wilson and B. Raphael (eds). International Handbook of Traumatic Stress Syndromes. New York: Plenum Press.

Green, B.L. (1994). Psychosocial research in traumatic stress: An update in Journal of Traumatic Stress, 7(3), 341-362

Green, B.L., Wilson, J.P. and Lindy, J.D. (1985). Conceptualising posttraumatic stress disorder: A psychosocial framework in C. Figley (ed). Trauma and Its Wake, Vol 1. The Study and Treatment of Post Traumatic Stress Disorder. New York: Brunner/Mazel.

Green, M.A. and Berlin, M.A. (1987). Five psychosocial variables related to the existence of post-traumatic stress disorder symptoms in Journal of Clinical Psychology, 43(6), 643-649

Green, R. (1999). An Exploratory Study to Identify the Range of Occupational Stressors that Occur Among Ambulance Workers in Johannesburg Unpublished master's thesis, Rand Afrikaans University, Johannesburg.

Green, S.B. (1991). How many subjects does it take to do a regression analysis? in Multivariate Behavioral Research, 26, 499-510

Grevin, F. (1996). Posttraumatic stress disorder, ego defense mechanisms, and empathy among urban paramedics in Psychological Reports, 79, 483-495

Grigsby, D.W. and McKnew, M.A. (1988). Work-stress burnout among paramedics in Psychological Reports, 63, 55-64

Health Professions Act. (Act no.56 of 1974/ 2002). South Africa: Department of Health

Heller, K., Swindle, R. and Dusenbury, L. (1986). Component social support processes: Comments and integration in Journal of Consulting and Clinical Psychology, 54(4), 466-470

Herman, J. (1992). Trauma and Recovery. The Aftermath of Violence - From Domestic Abuse to Political Terror. New York: Basic Books.

Hijacked paramedics forced to have sex (2004, February). The Star , p. 2.

Horowitz, M. (1976). Stress Response Syndromes New York: Aronson.

Horowitz, M. (1999). Stress response syndromes: Character style and dynamic psychotherapy in M. Horowitz (ed). Essential Papers on Posttraumatic Stress Disorder New York: New York University Press.

Horowitz, M., Wilner, N. and Alvarez, W. (1979). Impact of Event Scale: A measure of subjective stress in Psychosomatic Medicine, 41, 209-218

Hyer, L., Braswell, L., Albrecht, B., Boyd, S., Boudewyns, P. and Talbert, S. (1994). Relationship of NEO-PI to personality styles and severity of trauma in chronic PTSD victims in Journal of Clinical Psychology, 50(5), 699-707

International Road Traffic and Accident Database (2004). Retrieved April 23, 2004, from http://www.oecd.org/infobycountry.

Janoff-Bulman, R. (1985). The aftermath of victimisation: Rebuilding shattered assumptions in C. Figley (ed). Trauma and Its Wake, Vol 1. The Study and Treatment of Post Traumatic Stress Disorder. New York: Brunner/Mazel.

Joseph, S. (2000). Psychometric evaluation of Horowitz's Impact of Event Scale: A review in Journal of Traumatic Stress, 13(1), 101-113

Joseph, S., Yule, W., Williams, R. and Andrews, B. (1993). Crisis support in the aftermath of disaster: A longitudinal perspective in British Journal of Clinical Psychology, 32, 177-185

Joseph, S., Yule, W. and Williams, R. (1994). Post-traumatic stress: Attributional aspects in Journal of Traumatic Stress, 6(1), 501-513

Joseph, S., Yule, W. and Williams, R. (1995). Emotional processing in survivors of the Jupiter cruise ship disaster in Behaviour Research and Therapy, 33(2), 187-192

Kaplan, H.I., Sadock, B.J. and Grebb, J.A. (1994). Synopsis of Psychiatry (7th ed) Baltimore: Williams and Wilkins.

Kassen, M. (2002). Posttraumatic Response, Ego Defense Style and Sense of Coherence Amongst a Sample of Police Officers Unpublished master's thesis, Wits University, Johannesburg.

Kaufmann, G.M. and Beehr, T.A. (1989). Occupational stressors, individual strains and social supports among police officers in Human Relations, 42, 185-197

Kazak, A., Barakat, L., Meeske, K., Christakis, D., Meadows, A., Casey, R., Penati, B. and Stuber, M. (1997). Posttraumatic stress, family functioning, and social support in survivors of childhood leukaemia and their mothers and fathers in Journal of Consulting and Clinical Psychology, 65, 120-129

Keane, T.M., Scott, W.O., Chavoya, G.A., Lamparski, D.M. and Fairbank, J.A. (1985). Social support in Vietnam veterans with posttraumatic stress disorder: A comparative analysis in Journal of Consulting and Clinical Psychology, 53, 95-102

Kilpatrick, D.G., Veronen, L.J. and Best, C.L. (1985). Factors predicting psychological distress among rape victims in C. Figley (ed). Trauma and Its Wake, Vol 1. The Study and Treatment of Post Traumatic Stress Disorder. New York: Brunner/Mazel.

Kirmeyer, S.L. and Dougherty, T.W. (1988). Work load, tension, and coping: Moderating effects of supervisor support in Personnel Psychology, 41, 125-140

Kleinbaum, D.G., Kupper, A.L., Muller, K.E. and Nizam, A. (1998). Applied Regression Analysis and Multivariable Methods California: Brooks-Cole.

Kopel, H. and Friedman, M. (1997). Posttraumatic symptoms in South African police exposed to violence in Journal of Traumatic Stress, 10, 307-317

Lam, J.N. and Grossman, F.K. (1997). Resiliency and adult adaptation in women with and without self-reported histories of childhood sexual abuse in Journal of Traumatic Stress, 10(2), 175-196

Lazarus, R. and Folkman, S. (1984). Stress, Appraisal and Coping New York: Springer.

Linley, P.A. (2003). Positive adaptation to trauma: Wisdom as both process and outcome in Journal of Traumatic Stress, 16(6), 601-610

Lundin, T. and Bodegard, M. (1993). The psychological impact of an earthquake on rescue workers: A follow-up study of the Swedish group of rescue workers in Armenia, 1988 in Journal of Traumatic Stress, 6(1), 129-139

MacDonald, C., Chamberlain, K., Long, N. and Flett, R. (1999). Posttraumatic stress disorder and interpersonal functioning in Vietnam war veterans: A mediational model in Journal of Traumatic Stress, 12(4), 701-707

Manolias, M.B and Hyatt-Williams, A (1993). Effects of postshooting experiences on police-authorised firearms officers in the United Kingdom in J.P. Wilson and B. Raphael (eds). International Handbook of Traumatic Stress Syndromes. New York: Plenum Press.

Marmar, C.R., Weiss, D.S., Metzler, T.J., Ronfeldt, H.M., and Foreman, C. (1996). Stress responses of emergency services personnel to the Loma Prieta earthquake interstate 880 freeway collapse and control traumatic incidents in Journal of Traumatic Stress, 9, 63-85

Maslach, C. (1982). Burnout: The Cost of Caring. New Jersey: Prentice-Hall.

McCammon, S.L. (1996). Emergency medical service workers: Occupational stress and traumatic stress in D. Paton and J. Violanti (eds). Traumatic Stress in Critical Occupations Springfield, U.S.A.: Charles C Thomas.

McCammon, S.L., Durham, T.W., Allison, E.J. and Williamson, J.E. (1988). Emergency workers' cognitive appraisal and coping with traumatic events in Journal of Traumatic Stress, 1, 353-372

McFarlane, A.C. (1989). The aetiology of post-traumatic morbidity: Predisposing, precipitating and perpetuating factors in British Journal of Psychiatry, 154, 221-228

Medics on alert after N2 attacks. (2003, September). The Cape Argus, p. 8.

Mitchell, J.T and Dyregrov, A. (1993). Traumatic stress in disaster workers and emergency personnel: Prevention and intervention in J.P. Wilson and B. Raphael (eds). International Handbook of Traumatic Stress Syndromes. New York: Plenum Press.

Monahan, D.J. and Hooker, K. (1997). Caregiving and social support in two illness groups in Social Work, 42(3), 279-287

Moran, C. and Britton, N.R. (1994). Emergency work experience and reactions to traumatic incidents in Journal of Traumatic Stress, 7(4), 575-585

Motta, R. (1993). Psychotherapy for Vietnam-related post traumatic stress disorder in Psychological Reports, 73, 67-77

Murphy, S. (1988). Mediating effects of intrapersonal and social support on mental health 1 and 3 years after a natural disaster in Journal of Traumatic Stress, 1(2), 154-172

Naidoo, K. (2000). Does Exposure to, and Frequency of Exposure to Traumatic Events Predispose Public Order Police (POP) Members to Developing Post-Traumatic Stress Disorder (PTSD), Secondary Traumatic Stress Disorder (STSD) or Compassion Fatigue Unpublished honour's research report, Wits University, Johannesburg.

Navia, C.E. and Ossa, M. (2003). Family functioning, coping, and psychological adjustment in victims and their families following kidnapping in Journal of Traumatic Stress, 16(1), 107-112

Neal, L.A., Busuttil, W., Rollins, J., Herepath, R., Strike, P. and Turnbull, G. (1994). Convergent validity of measures of post-traumatic stress disorder in a mixed military and civilian population in Journal of Traumatic Stress, 7, 447-455

Newman, E., Riggs, D.S. and Roth, S. (1997). Thematic resolution, PTSD, and complex PTSD: The relationship between meaning and trauma-related diagnoses in Journal of Traumatic Stress, 10, 197-212

Nolen-Hoeksema, S (1987). Sex differences in unipolar depression: Evidence and theory in Psychological Bulletin, 101 (2), 259-287

Norris, F.H. and Hamblen, J.L. (2004). Standardized self-report measures of civilian trauma and PTSD in J. Wilson and T. Keane (eds). Assessing Psychological Trauma and PTSD (2nd ed) New York: Guilford Press

O'Reilly, B.K. (1995). Social Support Appraisals Scale: Construct validation for psychiatric inpatients in Journal of Clinical Psychology, 51, 37-42

Ormel, J. and Wohlfarth, T. (1991). How neuroticism, long-term difficulties, and life situation change influence psychological distress: A longitudinal model in Journal of Personality and Social Psychology, 60(5), 744-755

Ortlepp, K. and Friedman, M. (2002). Prevalence and correlates of secondary traumatic stress in workplace lay trauma counselors in Journal of Traumatic Stress, 15(3), 213-222

Owen, W. (1918). Dulce Et Decorum Est in J. Stallworthy (ed). The Oxford Book of War Poetry London: Oxford University Press.

Palmer, C.E. (1983). A note about paramedics' strategies for dealing with death and dying in Journal of Occupational Psychology, 56, 83-86

Paton, D. (1994). Disaster relief work: An assessment of training effectiveness in Journal of Traumatic Stress, 7(2), 275-288

Paton, D. (1996). Traumatic stress in critical occupations in D. Paton and J. Violanti (eds). Traumatic Stress in Critical Occupations Springfield, U.S.A.: Charles C Thomas.

Paton, D. and Smith, L.M. (1996). Psychological trauma in critical occupations: Methodological and assessment strategies in D. Paton and J. Violanti (eds). Traumatic Stress in Critical Occupations Springfield, U.S.A.: Charles C Thomas.

Paton, D. and Stephens, C. (1996). Training and support for emergency responders in D. Paton and J. Violanti (eds). Traumatic Stress in Critical Occupations Springfield, U.S.A.: Charles C Thomas.

Paton, D. and Violanti, J. (1996). Preface in D. Paton and J. Violanti (eds). Traumatic Stress in Critical Occupations Springfield, U.S.A.: Charles C Thomas.

Peterson, K.C., Prout, M.F. and Schwartz, R.A. (1991). Post-Traumatic Stress Disorder: A Clinician's Guide New York: Plenum Press.

People Opposing Women Abuse (2004). Retrieved June 23, 2004, from http://www.powa.co.za.

Pines, A. (1983). On burnout and the buffering effects of social support in B. Farber (ed) Stress and Burnout in the Human Service Professions New York: Pergamon.

Pole, N., Best, S.R., Weiss, D.S., Metzler, T., Liberman, A.M., Fagan, J and Marmar, C.R. (2001). Effects of gender and ethnicity on duty-related posttraumatic stress symptoms among urban police officers in Journal of Nervous and Mental Disease, 189, 442-448

Pole, N., Neylan, T.C., Best, S.R., Orr, S.P. and Marmar, C.R. (2003). Fear-potentiated startle and posttraumatic stress symptoms in urban police officers in Journal of Traumatic Stress, 16(5), 471-479

Robinson, H.M., Sigman, M.R. and Wilson, J.P. (1997). Duty-related stressors and PTSD symptoms in suburban police officers in Psychological Reports, 81, 835-845

Rosenthal, R. and Rosnow, R.L. (1991). Essentials of Behavioural Research: Methods and Data Analysis (2nd ed). New York: McGraw-Hill.

Roth, S., Newman, E., Pelcovitz, D, van der Kolk, B. and Mandel, F.S. (1997). Complex PTSD in victims exposed to sexual and physical abuse: Results from the DSM-IV field trial for posttraumatic stress disorder in Journal of Traumatic Stress, 10(4), 539-555

Salston, M. and Figley, C.R. (2003). Secondary traumatic stress effects of working with survivors of criminal victimisation in Journal of Traumatic Stress, 16(2), 167-174

Sandler, I.N. and Barrera, M. (1984). Toward a multimethod approach to assessing the effects of social support in American Journal of Community Psychology, 12, 37-52

Sarason, I.G., Levine, H.M., Basham, R.B., and Sarason, B.R. (1983). Assessing social support: The Social Support Questionnaire in Journal of Personality and Social Psychology, 44, 127-139

Sarason, B.R., Shearin, E.N., Pierce, G.R. and Sarason, I.G. (1987). Interrelations of social support measures: Theoretical and practical implications in Journal of Personality and Social Psychology, 52, 813-832

Sarason, B.R., Sarason, I.G. and Pierce, G.R. (1990). Traditional views of social support and their impact on assessment. In B.R. Sarason, I.G. Sarason and G.R. Pierce (eds). Social Support: An Interactional View USA: John Wiley and Sons.

Schilling, R.F. (1987). Limitations of social support in Social Service Review, 61(1), 19-30

Schooler, T.Y., Dougall, A.L. and Baum, A. (1999). Cues, frequency, and the disturbing nature of intrusive thoughts: Patterns seen in rescue workers after the crash of flight 427 in Journal of Traumatic Stress, 12(4), 571-585

Schutzwohl, M. and Maercker, A. (1999). Effects of varying diagnostic criteria for posttraumatic stress disorder are endorsing the concept of partial PTSD in Journal of Traumatic Stress, 12(1), 155-165

Sick criminals hijack ambulances. (2004, February). The Sunday Times, p. 7.

Solomon, S.D. (1986). Mobilising social support networks in times of disaster victims in C. Figley (ed). Trauma and Its Wake, Vol II. Traumatic Stress Theory, Research and Intervention. New York: Brunner/Mazel.

South African "Arrive Alive" Campaign (2004). Retrieved April 21, 2004, from http://www.arrivealive.co.za.

South African Department of Safety and Security (2001). Retrieved April 21, 2004, from http://www. saps.gov.za/statistics/reports/crimestats.

Sparrius, S.K. (1992). Occupational stressors among ambulance and rescue service workers in South African Journal of Psychology, 22(2), 87-91

Straker, G. and the Sanctuaries Counselling Team (1987). The continuous traumatic stress syndrome - The single therapeutic interview in Psychology in Society, 8, 48-79

Stratton, J.G., Parker, D.A. and Snibbe, J.R. (1984). Post-traumatic stress: Study of police officers involved in shootings in Psychological Reports, 55, 127-131

Stromnes, J. (1999). The Incidence of Post Traumatic Stress Disorder Among Police Officers Unpublished master's thesis, University of South Africa, Pretoria.

Tabachnik, B. and Fidell, L. (1996). Using Multivariate Statistics (3rd ed). New York: Allyn and Bacon

Taft, C.T., Stern, A.S., King, L.A. and King, D.W. (1999). Modeling physical health and functional health status: The role of combat exposure, posttraumatic stress disorder, and personal resource attributes in Journal of Traumatic Stress, 12(1), 3-23

Terry, D.J., Nielsen, M. and Perchard, L. (1993). Effects of work stress on psychological wellbeing and job satisfaction: The stress-buffering role of social support in Australian Journal of Psychology, 45, 168-175

Tolsdorf, C. (1976). Social networks, support, and coping: An exploratory study in Family Process, 15, 407-417

Trimble, M.R. (1985). Posttraumatic stress disorder: History of a concept in C. Figley (ed). Trauma and Its Wake, Vol 1. The Study and Treatment of Post Traumatic Stress Disorder. New York: Brunner/Mazel.

Ullman, S.E. and Filipas, H.H. (2001). Predictors of symptom severity and social reactions in sexual assault victims in Journal of Traumatic Stress, 14(2), 369-389

Van der Kolk, B. (1988). The trauma spectrum: The interaction of biological and social events in the genesis of the trauma response in Journal of Traumatic Stress, 1(3), 273-281

Van der Kolk, B., Weisaeth, L. and van der Hart, O. (1996). History of trauma in psychiatry in B. van der Kolk, A. McFarlane and O. van der Hart (eds). Traumatic Stress New York: Guilford Press.

Vaux, A. (1985). Factor structure of the Network Orientation Scale in Psychological Reports, 57, 1181-1182

Vaux, A. (1987). Appraisals of social support: Love, respect, and involvement in Journal of Community Psychology, 15, 493-502

Vaux, A. (1990). Let's hang up and try again: Lessons learned from a social support intervention in American Journal of Community Psychology, 19(1), 85-90

Vaux, A. and Athanassopolou, M. (1987). Social support appraisals and network resources in Journal of Community Psychology, 15, 537-555

Vaux, A., Burda, P. and Stewart, D. (1986). Orientation towards utilisation of support resources in Journal of Community Psychology, 14, 159-170

Vaux, A., Phillips, J., Holly, L., Thomson, B., Williams, D. and Stewart, D. (1986). The Social Support Appraisals (SS-A) Scale: Studies of reliability and validity in American Journal of Community Psychology, 14, 195-219

Vaux, A., Riedel, S. and Stewart, D. (1987). Modes of social support: The Social Support Behaviours (SS-B) Scale in American Journal of Community Psychology, 15(2), 209-237

Viedge, M. (2001). Posttraumatic Stress Disorder in Firefighters: Its Impact on Intimate Relationships Unpublished master's thesis, Wits University, Johannesburg.

Violanti, J. (1996). Trauma stress and police work in D. Paton and J. Violanti (eds). Traumatic Stress in Critical Occupations Springfield, U.S.A.: Charles C Thomas.

Weiss, D.S. (2004). The Impact of Event Scale – Revised in J. Wilson and T. Keane (eds). Assessing Psychological Trauma and PTSD (2nd ed) New York: Guilford Press

Weiss, D.S., Marmar, C.R., Metzler, T.J. and Ronfeldt, H.M. (1995). Predicting symptomatic distress in emergency services personnel in Journal of Consulting and Clinical Psychology, 63, 361-368

Weiss, D.S. and Marmar, C.R. (1997). The Impact of Event Scale - Revised in J.P. Wilson and T.M. Keane (eds). Assessing Psychological Trauma and PTSD USA: Guilford Press.

Wilcox, B.L. (1981). Social support, life stress, and psychological adjustment: A test of the buffering hypothesis in American Journal of Community Psychology, 9, 371-386

Wilson, J.P. and Raphael, B. (1993). Theoretical and intervention considerations in working with victims of disaster in J.P. Wilson and B. Raphael (eds). International Handbook of Traumatic Stress Syndromes. New York: Plenum Press.

Wolfe, J. and Kimerling, R. (1997). Gender issues in the assessment of posttraumatic stress disorder in J.P. Wilson and T.M. Keane (eds). Assessing Psychological Trauma and PTSD U.S.A.: Guilford Press.

World Health Organisation (1998). Retrieved December 11, 1998, from www.who.int/en.

Zilberg, N., Weiss, D. and Horowitz, M. (1982). Impact of Event Scale: A cross validation study and some empirical evidence supporting a conceptual model of stress response syndromes in Journal of Consulting and Clinical Psychology, 50, 407-414

Zlotnick, C., Zakriski, A.L., Shea, M.T., Costello, E., Begin, A., Pearlstein, T. and Simpson, E. (1996). The long-term sequelae of sexual abuse: Support for a complex posttraumatic stress disorder in Journal of Traumatic Stress, 9(2), 195-205