

EVALUATING THE MULTIPLE STRESSOR INTERVENTION OF THE SOUTH-AFRICAN POLICE  
SERVICE AS A TRAUMA MANAGEMENT TOOL

by

COENRAAD WILLEM VAN DEN HEEVER

submitted in accordance with the requirements for  
the degree of

MASTER OF ARTS

in the subject

PSYCHOLOGY

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: PROF H C JANEKE

NOVEMBER 2013

Student number: 3256-420-1

I, Coenraad Willem van den Heever declare that

**EVALUATING THE MULTIPLE STRESSOR INTERVENTION OF THE SOUTH- AFRICAN POLICE  
SERVICE AS A TRAUMA MANAGEMENT TOOL.**

is my own work and that all the sources that I have used or quoted have been indicated and  
acknowledged by means of complete references.



\_\_\_\_\_  
C.W. van den Heever  
(Mr.)

2013 | 11 | 28  
DATE

## ACKNOWLEDGEMENTS

I wish to express my appreciation to the following people for making this dissertation possible:

- The Lord All mighty for this opportunity and His grace throughout this project.
- My wife Mia for her love, encouragement and support.
- My three children, Carmia, Ian, and Anrich for giving meaning to my life.
- My father, mother, Raymond, and Hester for providing me with the necessary life skills to achieve anything in life.
- My supervisor Prof. Chris Janeke for his expert guidance and patience throughout this study.
- Brigadier Buthelezi from the South- African Police Service for granting me permission to assess the SAPS trauma management tool.
- UNISA for the bursary and the opportunity to further my academic qualifications.

## SUMMARY

This study examined the validity of the South African Police Service (SAPS) multiple stressor intervention. The multiple stressor was developed for members of their specialised units to address Post Traumatic Stress Disorder (PTSD). Unfortunately, the SAPS multiple stressor intervention lacks scientific evidence to support its possible effectiveness in addressing PTSD. In the current study a deployment and intervention group was compared which employed a pre- test post-test design. The Davidson Trauma Scale and the Revised Impact of Event Scale measured PTSD globally, but also the PTSD dimensions of Intrusion, Avoidance/Numbing, and Hyperarousal. The Wilcoxon signed rank test results indicated that the intervention and deployment was both effective in addressing PTSD although the intervention group revealed the greatest improvement in their overall PTSD scores. The intervention group made significant progress in dealing with all three PTSD symptoms while the deployment group made less progress with their Intrusion and Avoidance/Numbing symptoms, but made significant progress with their Hyperarousal symptoms. The Mann-Whitney *u* test revealed no significant differences between the post intervention test scores of the two groups, either globally or on the three PTSD dimensions. It appears that deployment was just as effective as the multiple stressor intervention in addressing PTSD.

### **Key terms:**

Multiple stressor intervention, Critical Incident Stress Debriefing (CISD), Trauma, South African Police Service (SAPS), Debriefing, Davidson Trauma Scale (DTS), Impact of Event Scale Revised (IES-R), Post Traumatic Stress Disorder (PTSD), Acute Stress Disorder (ASD).

## TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	
1.1 HISTORICAL DEVELOPMENT IN SOUTH- AFRICA (SA)	2
1.2 DUTIES OF NATIONAL INTERVENTION UNIT MEMBERS	4
1.3 TRAUMATIC INCIDENTS	5
1.4 LEVEL OF SCIENTIFIC EVIDENCE	8
1.5 SUMMARY	9
1.6 PREVIEW OF SUBSEQUENT CHAPTERS	9
CHAPTER 2: THEORETICAL BACKGROUND	
2.1 INTRODUCTION	11
2.2 DEFINITION OF TERMS	11
2.2.1 Crisis	11
2.2.1.1 <i>Crisis phases</i>	11
2.2.2 Trauma	13
2.2.2.1 <i>Stages of trauma</i>	13
2.2.2.2 <i>Traumatic (critical) incidents</i>	14
2.2.4 Debriefing	16
2.2.5 Critical Incident Stress Management (CISM)	17
2.2.6 Post Traumatic Stress Disorder (PTSD)	17
2.2.6.1 <i>DSM-IV classification for PTSD</i>	18
2.3 PSYCHOLOGICAL THEORIES OF TRAUMA	22
2.3.1 Psychodynamic theory	23
2.3.2 Learning theory	24
2.3.3 Cognitive behavioral theories	26
2.3.3.1 <i>Information processing theory</i>	26
2.3.3.2 <i>Social-cognitive theories</i>	27
2.3.3.3 <i>Dual representation theory</i>	28
2.4 HISTORICAL OVERVIEW	31
2.5 DEBRIEFING MODELS: A PREVENTATIVE APPROACH	33
2.5.1 Mitchell model (Critical Stress Debriefing) (CISD)	34
2.5.2 The Dyregrov model (Process Debriefing) (PD)	36
2.5.3 Jacobs model	37
2.6 SAPS MULTIPLE STRESSOR INTERVENTION: PROCEDURES AND LESSON PLANS	39
2.7 SUMMARY	40
CHAPTER 3: LITERATURE SURVEY	
3.1 INTRODUCTION	42
3.2 TYPES OF EVIDENCE USED TO JUDGE AN INTERVENTION EFFICACY	42
3.2.1 Anecdotal reports and satisfaction surveys	42
3.2.2 Cross-sectional design studies	43
3.2.3 Randomised Controlled Trials (RCT)	43
3.3 CRITIQUES AGAINST CRITICAL INCIDENT STRESS DEBRIEFING (CISD)	44
3.4 ADVOCACY FOR CISD	48
3.5 CONSENSUS AMONGST RESEARCHERS OVER CISD	51
3.6 PROBLEM FORMULATION AND HYPOTHESES	52
3.7 SUMMARY	55
CHAPTER 4: METHODOLOGY	
4.1 INTRODUCTION	56
4.2 RESEARCH DESIGN	56
4.3 SAMPLE GROUP	58
4.4 MEASURING INSTRUMENTS	60
4.4.1 General demographic questionnaire	60
4.4.2 Current traumatic stress and general stress questionnaire	60

4.4.3 Psychometric scales	62
4.4.3.1 <i>Impact of Event Scale Revised (IES-R)</i>	62
4.4.3.2 <i>Davidson Trauma Scale (DTS)</i>	64
4.5 PROCEDURE	66
4.6 TECHNIQUES OF ANALYSIS	68
4.7 ETHICAL CONSIDERATIONS	69
4.8 SUMMARY	69
CHAPTER 5: DISCUSSION OF RESULTS	
5.1 INTRODUCTION	71
5.2 DESCRIPTIVE STATISTICS	71
5.2.1 Skewness and Kurtosis	73
5.3 HYPOTHESES	75
5.3.1 Within group testing	75
5.3.2 Between group testing	84
5.4 CURRENT TRAUMATIC STRESS AND GENERAL STRESS RESULTS	89
5.5 SUMMARY	90
CHAPTER 6: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS	
6.1 INTRODUCTION	91
6.2 QUANTITATIVE RESULTS	91
6.3 CURRENT TRAUMATIC STRESS AND GENERAL STRESS FINDINGS	95
6.4 CONCLUSION	96
6.5 LIMITATIONS OF THE STUDY AND RECOMMENDATIONS	96
6.6 SUMMARY	98
REFERENCES	100

#### LIST OF TABLES

Table 2.1	Typical reactions of a victim of trauma	15
Table 2.2	Trauma management within the SAPS	16
Table 2.3	Mitchell model	35
Table 2.4	Multiple-stressor intervention lesson plans	40
Table 4.1	Characteristics of the participants	59
Table 5.1	Traumatic events encountered by research subjects	73
Table 5.2	Skewness and Kurtosis on the Davidson Trauma Scale (DTS)	74
Table 5.3	Skewness and Kurtosis on the Impact of Event Scale-Revised (IES-R)	74
Table 5.4	DTS- Intervention group	76
Table 5.5	IES-R- Intervention group	76
Table 5.6	DTS- Deployment group	77
Table 5.7	IES-R- Deployment group	77
Table 5.8	PTSD-Total score-DTS	78
Table 5.9	PTSD-Total score-IES-R	78
Table 5.10	IES-R- Intrusion dimension	79
Table 5.11	DTS- Intrusion dimension	80
Table 5.12	IES-R- Avoidance and Numbing dimension	81
Table 5.13	DTS- Avoidance and Numbing dimension	81
Table 5.14	IES-R- Hyperarousal dimension	82
Table 5.15	DTS-Hyperarousal dimension	83
Table 5.16	PTSD-Total score-DTS	84
Table 5.17	Three PTSD dimensions -DTS	85
Table 5.18	PTSD-Total score -IES-R	87

Table 5.19	Three PTSD dimensions- IES-R	88
Table 5.20	Current traumatic stress and general stress results	89
Table 5.21	Types of negative stressors during the research period	90

#### **FIGURES**

Figure 4.1	Pre- test post-test design	57
Figure 5.1	Period at SAPS National Intervention Unit (NIU)	71
Figure 5.2	Gender distribution	72

#### **APPENDICES**

Appendix A:	General Demographic questionnaire	119
Appendix B:	Current Traumatic Stress and General Stress questionnaire	122
Appendix C:	Impact of Event Scale-Revised (IES-R)	124
Appendix D:	Davidson Trauma Scale (DTS)	126
Appendix E:	DTS Table	128

## **CHAPTER 1**

### **INTRODUCTION**

Law enforcement has often been rated as a stressful occupation (Malloy & Mayes, 1984; Anshel, 2000). The occupational stressors that confront the police officer can be divided into two categories, namely, general work stressors and critical incident stressors (Copes, 2005). General work stress amongst police officers includes shift work, little control over outcomes (e.g., the conviction of criminals in a court of law), lack of support from supervisors, and little input from subordinates into management decisions (Finn, 1997 as cited in Copes, 2005; Stevens, 1999 a, b). On the other side of the “stress continuum” of critical incidents, research studies have revealed that the most stressful events for a police official include incidents of violence and death and these events exert a negative impact on their well-being (Pendergrass & Ostrove, 1984; Sewell, 1983).

Shooting incidents are regarded as being the most stressful experience for a police member, not only due to the trauma involved, but also due to the constant reliving of the incident while investigations are being conducted (Kitaeff, 2011). According to Lonsway and Welch (2004), critical incidents could have negative psychological and physiological effects on the police official and could even lead to the development of Post Traumatic Stress Disorder (PTSD). Studies by Kureczka (1996) and Wilson, Poole and Trew (1997) have reported that between 2 % and 26 % of law enforcement officers who had encountered a traumatic incident were eventually diagnosed with PTSD. Some researchers even speculated that 12 % to 35 % of all police officers reveal some sort of PTSD symptomology as a result of critical incidents (Mann & Neece, 1990).

The current study focused on Post Traumatic Stress Disorder (PTSD) in the South- African context, specifically in the South- African Police Services (SAPS). This research project is mainly an applied study to determine whether a new intervention is effective or not. More specifically, this study assessed the efficacy of a new trauma management tool on post traumatic stress disorder symptoms. The multiple stressor intervention programme was designed for SAPS high risk units that are exposed to various forms of traumatic incidents, and also to address recurring trauma (see Chapter 2).

## 1.1 HISTORICAL DEVELOPMENT IN SOUTH AFRICA (SA)

Since the abolishment of apartheid after the 1994 elections a new democratic government relaxed the excessive controls on society. Unfortunately, this was not swiftly replaced by a strong civil society or the immediate redistribution of resources and income (Whiteside & Sunter, 2000). Since then SA has been plagued by certain socio-economic problems such as high levels of HIV/AIDS (Whiteside & Sunter, 2000), unemployment, poverty and famine (Van Staden, 2010), crime (Pelser, Schnetler, & Louw, 2002 as cited in Rothmann, 2005) and violence. During 2000, Interpol issued a report stating that SA has a very high level of violence (e.g., murder, rape, robbery and assault) compared to 90 other countries also included in this report. Almost 60 % of reported serious crimes in SA consisted of theft (23.1 %), assault (20.1 %), and housebreaking, collectively at residential and business premises (15.5 %) (Pienaar & Rothmann, 2005).

In a more recent report during 2009/2010, a total of 2 121 887 serious crime cases were recorded in SA (SAPS, 2011). These serious crimes were divided into the following broad types:

- Contact crimes: crimes against the person (e.g., murder and assault, 31.9 %)
- Contact-related crimes (e.g., damage to property and arson, 6.5 %)
- Property-related crimes (e.g., burglary and vehicle theft, 26.1 %)
- Other serious crimes (e.g., commercial crime and shoplifting, 25.5 %)
- Crimes detected as a result of police action (e.g., illegal possession of firearms and drug-related crimes, 10.0 %)

According to the 2009/2010 annual report, murder had decreased from 26 877 in 1995/1996 to 16 834 in 2009/2010 which represented a 37 % reduction in cases. Unfortunately, property-related crimes increased significantly in the following categories: burglary at residential (2.7 %) and non-residential (1.2 %) premises, theft from a motor vehicle (8.9 %) and stock theft (6.5 %).

The SAPS which is responsible for policing these crimes has also undergone changes and

transformation since the first democratic elections back in the mid-90s (Storm & Rothmann, 2003). The organisation was viewed as being oppressive by certain parts of the population and was transformed from a paramilitary organisation which enforced unacceptable and unfair apartheid laws to a demilitarised transparent organisation which is currently service and community orientated (Kopel, 1996; Gordon, 2001) in conjunction with an affirmative action policy (Van Der Walt, 2002 as cited in Storm & Rothmann, 2003). Adopting a community orientated policing approach causes a new type of organisational stress which could lead to role conflict and role ambiguity for police officials (Finn & Tomz, 1996 as cited in Copes, 2005). Even in the United States of America certain police officers perceived Community Orientated Problem Solving Policing (COPP) as an extra source of stress, especially when their roles and responsibilities were amended (Lord, 1996). These officers were expected to render a service to the public, maintain order and enforce the law. Police officers were placed under pressure to protect the community, but at the same time also arrest perpetrators from the same community they served (Lord, 1992 as cited in Copes, 2005).

To complicate matters even further in the South African context, the SAPS was transformed, once more, back to a police force with accompanying military ranks during 2010 (SAPS, 2010). In general, SAPS members have to face high levels of crime, organisational transformation and lack of resources which could result in increased rates of illness, post traumatic stress, alcohol abuse and even suicides (Anshel, 2000; Rothmann & Strijdom, 2002).

General police work within the SAPS includes high speed car chases after a robbery, raiding of houses for illegal firearms (SAPS, 2003), resolving domestic disputes and dealing with victims of crime (Smith, 2005 as cited in Rees & Smith, 2007). Pertinent literature suggested that the police force as an employment sector is one of the most stressful working environments (Anshel, Robertson, & Caputi, 1997; Violanti, 2004). Negative outcomes from a stressful working environment include: absenteeism from work, aggressive tactics (e.g., use of excessive force when making arrests), burnout, early retirement, insubordination, transfers and fatigue (Vila, Morrison, & Kenney, 2002; Kop & Euwema, 2001).

Other than these general duties performed by police officials, there are certain specialised units within the SAPS which also have to deal with trauma on a daily basis. Examples of these units include the photographers of the Criminal Record Centre (CRC) who have to take photographs of gruesome, horrific murder and suicide scenes and members of the accident units who have to respond to calls when a person is killed or hurt in a vehicle collision. These members are further responsible for describing the manner in which the accident occurred, assisting emergency services personnel (e.g., paramedics) to remove corpses or injured bodies from the wreckage, and taking photographs of the accident scenes for possible evidence in court cases. These services are rendered to both members of the public and to police officials on duty. The last example of an SAPS specialised unit which has to contend with regular traumatic occurrences is the National Intervention Units (NIUs). Members from these intervention units have to perform daily tasks which endanger their lives and also affect their psychological well-being. The operational milieu of the NIU police officer includes violent and threatening interactions with a number of people (see paragraph 1.2 of this chapter). The aftermath of these “regular interactions” could result in traumatic stress or even full blown PTSD. Research by Stephens and Miller (1998) regarding New Zealand police officers has shown that the number of traumatic incidents and the repeated experience of the same type of traumatic event resulted in more intense PTSD symptoms and higher PTSD scores respectively. Green (1993, p. 141) also stated that: “Prolonged or multiple traumas would result in more complicated and [sic] or more severe responses [or both] than acute events”. The current study focused on the NIU of Pretoria and the SAPS intervention strategy which was designed to address post traumatic stress at this high risk unit.

## **1.2 DUTIES OF NIU MEMBERS**

Members of this unit have to perform certain duties which differ significantly from ordinary station work. These members have to combat public violence by providing protection to civilians and at the same time support the members of the Public Order Policing (POP) unit during service delivery protests. Recently, their daily work was portrayed on the news as that of keeping angry residents at bay who were protesting against poor service delivery in their communities (e.g., Diepsloot and Brits). These demonstrations could easily have turned

hostile and violent towards the SAPS. Nonetheless, NIU officials also have to execute specialised operational duties such as lay (ambush) operations at a planned cash in transit heist, reconnaissance in ATM bombings, as well as cordon off and secure high risk crime situations, especially in hostage situations. Furthermore, intervention units focus on the apprehension of dangerous criminals, who vary from right wing extremists (e.g., the “boeremag”) to drug lords. Lastly, members of these units have to control and isolate crime scenes in which civilians were murdered, especially in hijacking incidents where the driver or passengers or both were killed (SAPS, 2012). It should be evident that NIU members are highly trained police officers who need to be physically and psychologically healthy in order to perform optimally in their careers.

### **1.3 TRAUMATIC INCIDENTS**

When human beings are confronted by traumatic events this may trigger an Acute Stress Disorder or even Post Traumatic Stress Disorder. These traumatic events include combat experiences, abduction and a threat to one’s life, motor vehicle accidents, natural disasters, rape and incest, POW experiences, refugee status, child abuse, and lastly, the battered woman syndrome (Sue, Sue, & Sue, 1997). Traumatic experiences in the general population largely differ from trauma in the law enforcement sector. In order to understand trauma from an SAPS perspective, it is important to clearly indicate what constitutes a traumatic event for a police officer.

Traumatic events include the following from an SAPS perspective:

- Shooting incidents – consists of a member shooting another person or being shot by a perpetrator;
- Attempted or completed suicides by a member’s colleague(s);
- Bomb explosions;
- Attending gruesome incidents (e.g., murder and accident scenes as well as hostage situations);
- Extreme crowd violence and intimidation directed towards the officer;
- Any physical attack on a member or members of his or her unit;

- Hostage taking; and
- Any event that is viewed as being traumatic by the police officer (SAPS, 2008).

Exposure to trauma may also lead to critical incident stress which can be defined as: “Any event that has an unusually powerful, negative impact on personnel” (Miller, 2006, p. 93). If this critical incident stress is not resolved or is poorly treated it may escalate into a number of psychological traumatic syndromes, for instance panic attacks, anxiety, and depression (Miller, 2006).

It is therefore evident that police officers from the NIU are repeatedly exposed to violent and threatening scenes on a daily basis that are beyond the average person’s experience. Even ordinary police officials who work on the station level, do not usually experience this type of frequent exposure to trauma. These police members therefore often become traumatised due to multiple exposures to trauma on a visual and sensory level (SAPS, 2007).

According to Moran and Britton (1994), the more a police official is exposed to ensuing traumas the more his or her coping abilities will be challenged and if these abilities fail it could result in “psychological debilitation”. Evidence suggests that previous exposure to trauma increases the official’s susceptibility for developing PTSD, especially after natural disasters like earth quakes (Violanti, 1996). In a study on New Zealand police officers, Stephens and Miller (1998) indicated that the number of traumatic events positively correlated with PTSD and they also predicted higher PTSD scores amongst participants if the same type of traumatic event was experienced repeatedly.

In order to counter these negative effects of trauma exposure, the SAPS launched a debriefing programme in 1992, to address the high occurrence of post traumatic stress (Colley, 1995). A debriefing model was developed by Jacobs (SAPS, 2007) and was based on Mitchell’s Critical Incident Stress Debriefing (CISD) method (Mitchell, 1983). This modified model is discussed in the following chapter in conjunction with the original Mitchell model. Many government organisations globally have implemented debriefing as a crisis intervention tool because they fear being held liable for the clinical and financial aftermath of chronic psychiatric disorders in their workforce (Bryant & Harvey, 2000). Irrespective of

the agendas for using debriefing in law enforcement agencies, police officials need evidence-based programmes to deal with everyday occupational traumas (e.g., injury or death on duty), stress and post traumatic responses (Becker *et al.*, 2009; O' Hara & Violanti, 2009).

Debriefing as a crisis intervention tool can be viewed as a kind of psychological body armour that can fend off the consequences of a stressful critical incident (Miller, 2006). The goal of debriefing is to help traumatised members to process the aftermath of a critical incident while remaining functional in their careers, families and different communities (Pueler, 1988; Raphael, 1986). In conclusion, debriefing attempts to treat the physical and psychological symptoms after a human being has been exposed to a traumatic incident (Rainer & Brown, 2007).

Certain police officers stationed at these mentioned specialised units reported that they had already been debriefed, within a group context, more than 12 times (Supt. M.S. Watson, personal communication, October 20, 2009). They even claimed to know the seven phase Jacobs model by heart. In such instances it would probably not be conducive to continue with the Jacobs model. However, providing only a once off session is not the end of an organisation's responsibility towards their workforce recovering from trauma. The SAPS should make extensive use of strategies that prevent traumatic stress, especially if work-related stress forms part of the official's daily routine (Stephens & Miller, 1998).

In order to address this issue, the SAPS developed the multiple stressor intervention during 2008 and 2009, specifically for members of these units. This programme is versatile and can be used individually or in a group context to address trauma and stress on a long term basis. This intervention forms part of trauma management within the SAPS and is endorsed by the SAPS National instruction 18/98 V.03 (SAPS, 2008). The multiple stressor intervention programme consists of twenty lesson topics which are discussed in the next chapter. Each lesson can be presented every two months and may stretch over many months, or even years. Thus, this intervention is not a quick fix for post traumatic stress (SAPS, 2008).

Within the South African context (SAPS), evidence clearly supported the effectiveness of a revised CISD (Jacobs model) both qualitatively (Chabalala, 2004) and quantitatively (Colley,

1995). Unfortunately, there was no scientific evidence regarding the reliability and validity of the SAPS multiple stressor intervention programme. According to Casey Family Services, (n.d. as cited in Corvo *et al.*, 2009) it is unethical and may even violate professional norms if practitioners use intervention programmes that are not supported by extensive scientific evidence indicating effectiveness. All intervention programmes should be based on evidence. Evidence Based Practice (EBP) plays an important influential role on the different disciplines, including psychology, psychiatry, social work, and family therapy (Thyer, 2004). EPB can be defined as the use of a treatment programme for which sufficient evidence exists to support its effectiveness in order to obtain a desired result (Rosen, Proctor, & Staudt, 2003). The level of evidence is important and should be structured according to its scientific strength. These levels of strength are listed, hierarchically, in the following paragraph.

#### **1.4 LEVELS OF SCIENTIFIC EVIDENCE**

- Level 1 - Meta-analysis or replicated Randomized Controlled Trials (RCT) that includes a placebo condition or control group.
- Level 2 - At least one RCT with a placebo or comparison condition.
- Level 3 - Uncontrolled trial with ten or more subjects.
- Level 4 - Anecdotal case reports (Roberts & Yeager, 2004).

In the case of newly developed treatments evidence on only level four may be available (Roberts & Yeager, 2004). Regel (2007) claims that RCT appears to be the first choice in evaluating treatment outcomes, thereby excluding the other levels (levels two to four). According to Slawinski (2005), most new crisis intervention models have not been scientifically tested using RCT or any other kind of studies. The current study opted for level three evidence by using a control and intervention group to demonstrate the possible efficacy of multiple stressor intervention on post-traumatic stress. Unfortunately, true randomisation was not possible in the current study as only a small sample group was available (see Chapter 4).

## **1.5 SUMMARY**

This chapter commenced with the psychological theoretical context of the current study followed by an historical overview of South Africa after the abolishment of apartheid back in 1994. The changing role of the SAPS was discussed along with the statistics of the different crimes committed in this country between 1999-2000 and 2009-2010. Three different specialised units within the SAPS were introduced with special reference to the National Intervention Units (NIUs). A list of traumatic events from a SAPS perspective was also furnished with a discussion of the two trauma interventions designed to address trauma within the law enforcement sector. This chapter concluded with the four levels of scientific evidence necessary to demonstrate the efficacy of an intervention. These levels were listed according to their scientific strength, and consisted of meta-analysis or replicated Randomised Controlled Trials (RCT), one RCT with a control group, an uncontrolled trial with a minimum of ten subjects, and anecdotal reports.

## **1.6 PREVIEW OF SUBSEQUENT CHAPTERS**

### Chapter 2

This chapter provides relevant definitions and terminology which are pertinent to the understanding of trauma literature. The second part of this chapter focuses on the different psychological theories of trauma and also the history of debriefing. This is followed by the main debriefing models that can be used to assist victims of trauma. The last part describes the SAPS multiple stressor intervention programme and its different lesson plans that could be utilised to address recurring trauma.

### Chapter 3

The third chapter begins with a short historical overview of the development of debriefing followed by the three main types of evidence that are used to judge the effectiveness of crisis debriefing. The main focus of this chapter is to review the literature regarding research in the trauma field. This chapter concludes with the hypotheses that are tested in the current study.

#### Chapter 4

Chapter four commences by explaining the research design used in this study, namely a quasi-experimental research design which entailed that the participants were studied in their own natural environments. Next, the focus is shifted to the measuring instruments employed to obtain data. Lastly, an outline of the sample group is furnished as well as the non-parametric technique that is utilised for data analysis.

#### Chapter 5

This chapter is divided into three sections. The first section covers the descriptive statistics which accords a detailed description of the sample group as well as their frequency distribution. Section two presents the statistical results based on the Wilcoxon signed rank test as well as the Mann-Whitney  $u$  test. The last section furnishes the qualitative results regarding traumatic incidents and negative stressors faced by the participants during the research period.

#### Chapter 6

The last chapter presents a complete discussion of the qualitative and quantitative results obtained in the previous chapter. The limitations of this study and further recommendations are also addressed.

## **CHAPTER 2**

### **THEORETICAL BACKGROUND**

#### **2.1 INTRODUCTION**

This chapter furnishes definitions of relevant terms that are used during the rest of the chapter and subsequent chapters. This discussion is followed by an overview of the different theories of trauma and the models of debriefing that could be used to address traumatic experiences. Lastly, the SAPS multiple stressor intervention programme which was designed to deal with PTSD amongst SAPS members on a long term basis, is discussed along with the different lesson plans.

#### **2.2 DEFINITION OF TERMS**

##### **2.2.1 Crisis**

Different definitions for and explanations of an emotional crisis exist in the literature. Two are presented here to serve as an introduction to the theoretical constructs that will follow:

- According to Plug, Louw, Gouws, and Meyer (1997, p. 196) a crisis can be defined as: “A turning point marked by significant progress or deterioration or a decision or event with significant meaning to an individual”.
- “A crisis is by nature sudden, unexpected and overwhelming. It occurs in the wake of a disruption of a stable living condition, where normal coping behaviour proves unsuccessful in restoring homeostasis. When new coping behaviours are attempted they also fail. The resulting state of emotional crisis is characterized by feelings of defeat, disorganization and loss of control” (SAPS, 2007, p. 34).

##### *2.2.1.1 Crisis phases*

Different descriptions of the stages of a crisis exist in the literature (e.g., France, 1982; Hafen, 1982; Dixon, 1987).

The following three crisis phases have been identified by researchers in the field of trauma and were specifically selected for discussion due to their relevance to the current trauma study (Herman, 1997; Yassen & Harvey, 1998).

- Acute phase

This phase includes the physiological and psychological reactions of an individual. These reactions include the following: despair, hopelessness, shock, guilt, numbness, and disbelief.

In this initial state the exposed victim of the crisis may appear to be disorganised, incoherent or even volatile. The opposite can also be true; he or she may appear calm, withdrawn, and apathetic (Dass-Brailsford, 2007).

- Outward adjustment phase

During the second stage the affected individual tries to regain control by undertaking his or her daily routine activities once more. This phase can come into play within 24 hours after the onset of the crisis, but certain individuals may still remain deeply affected by the incident, resulting in withdrawal from their societies.

- Integration phase

In this last phase, the individual tries to make sense of the crisis. An important goal is to resolve feelings of blame or guilt that might be remnants of the previous phases. A person should also attempt to put the necessary changes in place in order to minimise similar crisis situations in future.

It is important to note that these phases follow a cyclic pattern which means that an individual could regress to a previous phase (e.g., acute state) if he or she is reminded of the crisis incident (Dass-Brailsford, 2007). For instance, a police officer may appear to cope well after a shooting incident by starting to engage in a normal daily routine (outward adjustment phase), but when the official has to testify and relive the incident once more he or she may recycle back to the acute phase with its accompanying symptoms of shock and disbelief.

## 2.2.2 Trauma

Trauma is often associated with a crisis (Colley, 1995) although it is more unpredictable than a crisis (Figley, 1985). Plug *et al.* (1997, p. 385) define trauma as: "Any unpleasant psychic experience that may have a disadvantageous influence, mostly on a long term base, on personality development or any physical injury or wound".

"The common denominator of trauma is a feeling of intense fear, helplessness, the loss of control and the threat of annihilation" (Herman, 1992, p. 3 as cited in Rainer & Brown, 2007). Trauma usually happens suddenly and unexpectedly (Nielsen, 1984 as cited in McMains & Mullins, 2006), especially in the case of natural disasters (e.g., earthquakes). Although natural disasters cause more destruction and loss of life than technological failures (e.g., plane crashes) or even man-made events (e.g., hostage situations), the psychological cost thereof is usually less than that of the other two types of trauma (Macload & Paton, 1999). Another characteristic of trauma is that parties involved in such traumatic events usually experience a loss of self-esteem (e.g., the professional identity of the police official comes under fire) and their value systems are also disrupted (e.g., the meaningfulness of life is challenged). Lastly, trauma threatens the lives of the victims of trauma by reminding them of how fragile life actually is (Nielsen, 1984 as cited in McMains & Mullins, 2006).

### 2.2.2.1 Stages of trauma

According to Tyhurst (1958 as cited in McMains & Mullins, 2006), most traumatic experiences follow a homogeneous pattern which consists of the following three stages:

- Impact stage:

The first stage commences with the notion that there is a threat (e.g., physical in nature) to the person's well-being and will be concluded when this threat is no longer considered to be a menace to his or her well-being. Usually people in this stage will continue with their daily lives as if they were on auto pilot. This stage can last minutes, hours, or even days, depending on the longevity of the incident and time needed to relive the incident in his or her own mind. Typical emotions during this stage include denial and isolation (Nielsen, 1986

as cited in McMains & Mullins, 2006).

- Recoil stage:

This stage usually commences when the preceding stressor comes to an end and continues until the person's life returns to normal. A distinctive feature of this stage is hypersensitivity to others, especially regarding criticism. A support network consisting of friends, family, and significant others is important during this stage. The duration of this stage could range from days to even weeks after the initial incident. People also exhibit a tendency to withdraw from their usual activities and interests during this particular stage (Nielsen, 1986 as cited in McMains & Mullins, 2006).

- Adaptation stage:

The third stage commences when the victim is no longer engaged with the incident and reverts back to a normal level of functioning. If the person has worked successfully through the incident, he or she will refer to it without the accompanying emotional turmoil, but the reverse is also true. If the person is still a victim of the incident, he or she could be confronted with intrusive thoughts or apathy in which case he or she would not feel any emotion. Trauma victims may also suffer intermittent periods of depression or anxiety during this stage, but these feelings will probably decrease once they start accepting what has happened and move on with their lives (Nielsen, 1986 as cited in McMains & Mullins, 2006).

#### *2.2.2.2 Traumatic (Critical) incidents*

The term refers to: "An event which is outside the usual range of experience and challenges one's ability to cope. The critical incident has the potential to lead to a crisis condition by overwhelming one's usual psychological defences and coping mechanisms" (Everly & Mitchell, 2000, p. 212).

General types of traumatic incidents within the population include: Situations of lethal force such as rape; natural disasters such as floods; man-made disasters such as car accidents; death of a colleague or friend; and a life threatening environment such as a war zone (Colley, 1995).

How do traumatic incidents affect the police official? Violent and traumatic events usually elicit strong emotions that are beyond the normal coping abilities of the person involved. The trauma victim's first reactions are usually intense anxiety and fear, numbness, shock, and anger (Antai-Otong, 2001). Generally, critical incidents overwhelm the trauma victims overall functioning which may lead to distorted thinking and poor coping responses. These distorted thinking patterns and coping responses present as fear, anxiety, and depression but they are considered to be normal responses to an abnormal situation (Everly & Mitchell, 1999).

Mitchell and Everly (2000) stated that typical reactions (within 24-72 hours after exposure to traumatic incidents) consisted of the following:

Table 2.1  
*Typical Reactions of a Victim of Trauma*

Emotional	Biological
Shock	Sleeping problems
Anger	Changes in eating patterns
Disbelief	Trembling
Guilt	GI disturbances
Terror	Nightmares
Sadness	Hyper arousal
Depression	Startle response
Fear	Autonomic nervous system arousal
Behavioural	Cognitive
Social withdrawal	Poor concentration
Alienation	Confusion
Hyper vigilance	Intrusive thoughts
Changes in communication and interaction patterns	Self-blame
Irritability and agitation	Poor self-esteem and self-confidence
Poor coping responses (e.g., excessive drinking)	Flashbacks
	Forgetfulness
	Upsetting images

## 2.2.4 DEBRIEFING

According to Chemtob, Tomas, Law, and Cremniter (1997), this term can be defined as a crisis intervention designed to relieve and prevent event-related distress in normal people who are experiencing abnormally stressful circumstances.

In the SAPS literature debriefing is stated to mean: “The emotional ventilation of feelings in a controlled and safe environment. The symptoms and feelings a person experiences are normal reactions to an abnormal situation” (Jacobs, 1993, p. 10).

Within the SAPS trauma is managed on three levels which include initial debriefing, formal debriefing, and multiple stressor intervention (Supt. M.S. Watson, personal communication, October 20, 2009). In order to understand these levels of assistance, it is important to highlight the differences between them as presented in Table 2.2.

Table 2.2

### *Trauma Management within the SAPS*

Initial debriefing	Formal debriefing	Multiple stressor intervention
Informal type of assistance	Formal type of assistance	Formal and structured type of assistance
First stage in helping a traumatised member	Second stage in helping a traumatised member	Third stage of helping members from high risk units
Performed by a trained initial debriefer (e.g., a commander)	Performed by one or two trained formal debriefers (e.g., a psychologist)	Presented by one or two trained facilitators from psychological services
Usually takes place straight after a traumatic incident	Usually takes place 24-72 hours after a traumatic incident	Usually presented every 2 months at high risk units (e.g., NIU)
Very short session-15minutes	Longer session -between 1-3 hours	Longer session -between 1-3 hours
Shorter process-focusing on practical arrangements (e.g., “Do you have a significant other at home to support you?”)	Longer process-focusing on member’s emotions after the incident	Extended type of intervention that may stretch over many months even years-focusing on post traumatic stress

(SAPS, 2001; SAPS, 2008).

## **2.2.5 CRITICAL INCIDENT STRESS MANAGEMENT (CISM)**

Critical incident stress management (CISM) refers to: “A comprehensive, systematic and integrated multi-component crisis intervention package that enables individuals and groups to receive assessment of need, practical support and follow-up following exposure to traumatic events in the work place” (Regel, 2007, p. 411).

The purpose of this follow-up is to check on the clients emotional well-being and to refer them, if necessary, to the next level of support which, with the assistance of a psychologist, provides a more long term therapeutic approach. CISM was especially designed for group application to emergency personnel exposed to traumatic events during the course of their work (Regel, 2007). The SAPS multiple stressor intervention could be equated to CISM and therefore the above mentioned working definition could also be applied to the intervention offered by the SAPS.

## **2.2.6 POST TRAUMATIC STRESS DISORDER (PTSD)**

This disorder is classified as an anxiety disorder that develops as a result of an extreme psychological or physical trauma (Sue *et al.*, 1997). After the trauma, the victim re-experiences the event through intrusive memories and nightmares. Anything that reminds the victim of the trauma will be avoided (Barlow & Durand, 2002). PTSD is diagnosed according to the DSM-IV-TR classification which will be discussed in the following paragraph. PTSD as a psychological disorder was only named and listed in the DSM-III in 1980 by the American Psychiatric Association (Barlow & Durand, 2002) and some scholars believe this was due to the high levels of PTSD symptomatology that affected soldiers after the Vietnam War (Orner, 1997). The inclusion of PTSD in the American Psychiatric Association’s DSM- III changed clinical judgements which at the time centred on predisposing psychological factors, for instance a soldier affected by pre-existing pathology and not by his direct experiences in Vietnam, to objective factors and stressful war events (Williams & Sommer, 2002).

### *2.2.6.1 DSM-IV classification for PTSD*

Unlike other DSM-IV-TR disorders, the classification of PTSD is very specific regarding its diagnosis. A person has to be exposed to a traumatic stressor before the PTSD label can be assigned to that person. Even if the person is highly symptomatic, this diagnosis cannot be given if there is no specific etiological event that precipitated their symptoms (Rosen, 2004).

The diagnostic criteria for PTSD in terms of the DSM-IV-TR (American Psychiatric Association, 2000) can be summarised as follows:

The person has either been exposed to a traumatic event which they experienced or witnessed an event that involved actual or threatened death or even serious injury to self or others. This person responded with intense fear, helplessness, and horror. The traumatic incident is re-experienced in the following ways: intrusive images of the event, recurrent dreams, flashbacks (feeling as if the event was recurring), psychological distress, and physiological reactivity when confronted with cues that resemble the original traumatic event (Intrusion symptoms).

The person tries to avoid stimuli that are associated with the trauma and experiences numbing of responsiveness. For instance, the victim will try to avoid conversations and places associated with the trauma, not be able to recall important aspects of the trauma, reveal feelings of detachment from others, be unable to have loving feelings, and exhibit a declining interest in activities they enjoyed in the past (Avoidance and Numbing symptoms).

Lastly, the trauma victim will show symptoms of increased arousal. This is usually indicated by outbursts of anger, concentration problems, sleeping disturbances, an excessive startle response, and hyper vigilance (Hyperarousal symptoms). In order to receive a positive diagnosis of PTSD, a certain number of these symptoms must be present for at least a one month period. Furthermore, these symptoms must also interfere with social, occupational, or other important areas of functioning and cause impairment for the person involved.

There is even evidence indicating that partial forms of PTSD can occur with fewer symptoms,

yet sufficient to make a formal diagnosis of PTSD, while these symptoms can seriously impair family, vocational, and psychological functioning (Miller, 2006; Robinson, Sigman & Wilson, 1997).

A new entry on the DSM-IV-TR classification is a psychological disorder known as Acute Stress Disorder (ASD). This in fact is PTSD which occurs during the first month after the critical incident. This category was specifically introduced because PTSD cannot be diagnosed until a month has elapsed after the traumatic event (Barlow & Durand, 2002). Although the ASD diagnostic criteria are clearly based on the PTSD criteria, there are several differences. The ASD criteria include an additional dissociative bundle of symptoms which distinguishes them from PTSD and include the following:

- Subjective sense of numbing or detachment;
- Reduced awareness of his or her surroundings;
- De-realisation;
- Depersonalisation; and
- Dissociative amnesia (Bryant & Harvey, 2000).

Some research has shown that a diagnosis of ASD is a strong prognosticator of later PTSD. Harvey and Bryant (1998) have demonstrated that three-quarters of individuals who had been involved in motor vehicle accidents and were diagnosed with ASD initially, were later diagnosed with PTSD. This finding was consistent with other research findings which stated that more than 80 % of trauma survivors who met the ASD criteria developed PTSD at a later stage (Brewin, Andrews, Rose, & Kirk, 1999). Unfortunately, expansive research on ASD has not been conducted due to its recent inclusion in the DSM-IV-TR classification system (Dass-Brailsford, 2007).

PTSD also coincides with other psychological disorders. According to Kessler, Sonnega, Bromet, Hughes, and Nelson (1995), 84 % of clients suffering from PTSD also have another psychiatric condition. Research by Creamer, Burgess, and McFarlane (2001) confirm this finding by showing that major depression existed in 48 % of the PTSD population and in 52 % of alcoholics. Suicidal ideation is also more prevalent in those suffering from PTSD when

compared with any of the other anxiety disorders (Ballenger *et al.*, 2000). In a more recent study, McTeague *et al.* (2010) demonstrated that patients with PTSD had more startle reflex potentiation, autonomic responding, and even facial muscle action when confronted with idiographic trauma imagery when compared with the control subjects. When the global PTSD group was subdivided into two groups, one which had experienced only a single traumatic incident and the other which had experienced recurrent traumatic exposure, an interesting picture emerged. Patients who suffered from PTSD after a single event exhibited more extreme startle potentiation to their fear memories when compared with the patients who had experienced multiple traumas. On the other hand, the patients exposed to recurrent traumatic events exhibited a less significant startle potentiation but more extensive co-morbidity between PTSD, major depression, and anxiety disorders.

PTSD not only coincides with other psychological disorders, but also tends to naturally dissipate over time which complicates research on the efficacy of trauma interventions. In a study conducted by Foa, Hearst-Ikeda, and Perry (1995), ten female victims of sexual and non-sexual assaults were compared with ten other matched female assault victims. The intervention group attended a short cognitive-behavioural programme which comprised four sessions. Besides cognitive-behavioural procedures, the intervention programme also focused on educating the victims about common trauma reactions. In contrast, members of the control group received only repeated assessments of their trauma related psychopathology. Two months after the traumatic incident, members of the intervention group showed less severe PTSD symptoms when compared with those of the control group. Five and a half months after the traumatic event members of the intervention group were significantly less depressed and also experienced less severe intrusion symptoms (e.g., re-experiencing the event) than their counterparts. Unfortunately, some of these victims were expected to recover naturally from the traumatic incident which inflated the efficacy of the intervention programme.

From a neuropsychological perspective, traumatic events can also cause damage to the brain structure, especially for those individuals exposed to recurring trauma (Dass-Brailsford, 2007). Research carried out by Shin *et al.* (2004) has revealed through brain imaging studies that chronically traumatised individuals exhibit hyper activation of the amygdala as well as

hypo activation of the medial prefrontal regions when confronted with fearful stimuli. This results in hypertrophy of the amygdala with new accompanying neuron branches which may lead to increased emotional responsiveness in the trauma victim. On the other hand, Gurvits *et al.* (1996) have demonstrated that clients with war-related PTSD show damage to the hippocampus region of their brains, which is an important part of the brain for both learning and memory. Clients suffering from PTSD indicate disruptions in their short term memory and this may explain why these victims have trouble recalling certain aspects of the traumatic event (Bremner, Vermetten, Southwick, Krystal, & Charney, 1998). Can this damage to the hippocampal area of the brain be reversed? Some evidence suggests that this biological process can indeed be reversed. In fact, research conducted by Starkman *et al.* (1999) on patients suffering from Cushing's disease demonstrated this point. This disease is responsible for the chronic activation of the Hypothalamic-Pituitary-Adrenocortical (HPA) axis and also increases cortisol flow in patients suffering from this disease. Cortisol is a stress hormone which is secreted as a result of stress and the HPA axis is a brain endocrine system connection which is implicated in psychopathology (Barlow & Durand, 2002). Starkman and his colleagues found an increase of up to 10 % in the hippocampus volume of these patients after they had received treatment for this condition.

Up to date research on PTSD revealed surprising new findings which offer a new perspective on the causes of this disorder. In a current study conducted by Berntsen *et al.* (2012), Danish soldiers deployed for a six month period in Afghanistan were studied. Instead of focusing on soldiers who were already suffering from this disorder, these researchers focused on assessing the young recruits before deployment, during their tour of duty, upon their return home and also after several months of readjustment to civilian life. A total of 746 subjects were involved in this study and the researchers' first contact session with the participants took place five to six weeks before deployment. Different psychometric instruments were used in order to assess the soldiers' level of functioning. This test battery consisted of a PTSD inventory, a test for depression and a questionnaire concerning traumatic life events relating to family violence during childhood, physical punishment, and the abuse of a spouse. In the second part of the research, the war experiences of the soldiers were also recorded by focusing on four domains, namely perceptions of the war zone, actual life threatening war experiences, battlefield wounds, and the experience of killing enemy soldiers. Lastly, the

researchers also assessed the soldiers' current level of functioning on home soil. Contrary to popular belief that this disorder is directly caused by a soldier's combat experiences and war atrocities, the results indicated that PTSD does not appear to be triggered by these traumatic experiences. Also, 13 % of the subjects initially displayed excessive anxiety and frequent nightmares after enlistment, but this pattern later changed to decreased levels of stress, especially after the first months of deployment to the war zone. Upon their return home these high levels of stress resurfaced once again. Researchers therefore theorised that those subjects who developed PTSD had problematic childhood experiences such as violent punishment which caused bruises and even broken bones, thereby dramatically increasing their vulnerability to this disorder. Furthermore, army life offered social support and true camaraderie to these soldiers, but unfortunately these mental health benefits ceased after their reintegration into ordinary civilian life. The authors concluded that: "The onset of PTSD was not predicted by traumatic war experiences but by childhood experiences of violence" (Berntsen et al., 2012, p. 75).

Before discussing the SAPS debriefing model and multiple stressor intervention programme, an overview is furnished of the classical psychological theories of trauma and how these theories explain PTSD symptomatology. This section is followed by the more important and well-known models of debriefing which were discussed in the literature.

## **2.3 PSYCHOLOGICAL THEORIES OF TRAUMA**

Various psychological accounts of traumatic stress have been presented. Freud's psychodynamic theory emphasised intra psychic conflict, but ignored the influence of external stressful events. The Behavioural School of Thought started out with the two-factor theory which included classical conditioning and operant avoidance. Their theory was later expanded to include more cognitive symptoms such as flashbacks which resulted in information processing theories. Thirdly, the social-cognitive theories focused more on the meaning a person attributed to an incident as well as the conflict that existed between the traumatic experience and previous beliefs of self and the world. Lastly, the dual representation theory endeavoured to integrate the information processing theory with the social-cognitive theories by theorising that two types of memory existed, each with its own

type of information processing. These four theories are discussed in the following paragraphs in greater detail.

### **2.3.1 Psychodynamic theory**

According to Freud's psychoanalytic theory, the ethology of hysteria (refers to somatic symptoms without a physical cause) can be traced back to the sexual abuse of children. He specifically used words like rape, abuse, attack, and aggression to indicate that the child's participation was not voluntary or a consensual act (Masson, 1985). Freud suggested that traumatic memory and emotions are repressed after sexual abuse because they threaten the ego of the victim involved. In contemporary psychology it is common knowledge that stress and emotional factors may lead to physical or psychological problems or both, and that traumatic incidents may cause physiological symptoms. Unfortunately, this new theory of mental illness was novel and not well received by the scientific fraternity of the time which eventually led to the denunciation of this theory in favour of the Oedipal Complex (Halpern & Tramontin, 2007).

Freud found himself in a state of disbelief that so many of his patients were objects of sexual abuse and subsequently de-accentuated the role of trauma in favour of the notion of intra psychic conflicts as being the cause of neuroses (Halpern & Tramontin, 2007). This intra psychic conflict refers to the notion that the sexual abuse could be attributed to the patient's father and were only fantasies of the patients involved (Resick, 2001). Freud stated: "I was at last obliged to recognize that these scenes of seduction had never taken place, and that they were only fantasies which my patients had made up" (Masson, 1985, p. 198).

Initially, the Freudian theory mainly emphasised the sexual causes of trauma and attempted to generalise these traumas to violence. The influential Oedipal-theory paved the way for the notion that women secretly, on an unconscious level, desire to be raped by a man and that this act is not traumatic for the victim. Fortunately, contemporary research has demonstrated that rape is in fact traumatic and could lead to psychological difficulties and sexual dysfunction (Resick, 2001).

After World War I, Freud became fully aware of the psychological impact of trauma and began to distinguish between traumatic and spontaneous neurosis (Resick, 2001). He even began to identify certain symptoms that would later be known in the field of psychology as PTSD symptoms, for example, intrusive symptoms such as flashbacks, and physiological reactivity such as hysteria. At the time, the main ego defence mechanism was repression (Resick, 2001) which refers to urges and desires or recollections which were unacceptable to the superego and were therefore transferred to the unconscious level (Meyer, Moore & Viljoen, 1997).

Although modern psychodynamic theories also include the Oedipus stages of development and general developmental issues in their theoretical reasoning, they also emphasise the impact of the traumatic incident on the victim's view of the self and others. This means that strong emotions are likely to surface when the trauma victim's conscious or unconscious representations of self or others are in direct conflict with the conventional views of the self and others. The trauma victim may start using psychological defence mechanisms in order to compensate for the incongruence between these different emotions and meanings. If the traumatic reactions continue as time elapses, the victim may use more ego defence mechanisms such as splitting and dissociation in order to cope. In the case of splitting, the trauma victim may view others as being all good or all bad without integrating both views, for example, a woman that has been sexually assaulted may see all men as bad, instead of realising that some men also have good qualities. This may lead to an incoherent sense of self and others which may result in victims experiencing trouble controlling affective states and therefore acting more impulsively. Trauma may also reactivate conflicts from prior developmental phases, for example, issues relating to the Oedipal period may include maternal protection and nurturing, bodily functions, and a fear of retaliation that were not properly resolved during that specific phase. This may in turn lead to a repetition of early maladaptive relationship patterns, for instance, a shifting in views of self and others either as victims, victimisers, or even rescuers (Marmar, Weiss, & Pynoos, 1995).

### **2.3.2 Learning theory**

During the 1970s behavioural therapists started using Mowrer's two-factor theory (1941 as

cited in Resick, 2001) of classical and operant conditioning, to offer an explanation for the post-traumatic symptoms they witnessed in rape victims and veterans from the Vietnamese war (Becker, Skinner, Axelrod, & Cichon, 1984; Holmes & St. Lawrence, 1983; Keane, Zimering, & Caddell, 1985; Kilpatrick, Veronen, & Best, 1985; Kilpatrick, Veronen, & Resick, 1982 as cited in Resick, 2001).

On the one hand, classical conditioning was used to explain the distress and fear witnessed in trauma victims while, on the other hand, operant conditioning was used to offer an explanation for the development of PTSD avoidance symptoms and the maintenance of fear. These two types of conditioning and how they relate to trauma are now elaborated on in more detail.

In classical conditioning, the traumatic incident refers to the unconditioned stimulus (UCS) which may arouse high levels of fear in the victim. This reaction refers to the unconditioned response (UCR) and this response may be associated with certain cues which are present during the incident but were neutral stimuli before the incident (Resick, 2001). According to classical thought, these previously neutral stimuli (signal) then become the conditioned stimuli (CS) (Halpern & Tramontin, 2007). For instance, if a victim is sexually assaulted at night in a deserted parking lot of a shopping mall, the darkness and parking lot will become the conditioned stimuli which may arouse a conditioned emotional response (CER). When the rape victim is confronted by a parking lot at dawn the CS evoke fear which is known as the conditioned response (CER). Two or more stimuli may cause a greater emotional response from the victim than any single one alone. Through the process of stimulus generalisation and higher order conditioning other related stimuli could also be conditioned and arouse fear in the victim (Resick, 2001). For example, the rape victim may start to fear all parking lots or could refuse to leave home at night.

Operant conditioning is used to explain why the link between the CS and CER do not get extinguished because the original traumatic stressor (UCS) does not repeat itself. According to operant conditioning, traumatic memory and other cues (CS) arouse fear and anxiety (CER) which the victim tends to avoid. This short term escape may lead to a reduction in fear and anxiety, but this avoidance of the CS hampers the extinction of the link between

traumatic cues (CS) and the accompanying anxiety (CER) which is a natural occurrence if the traumatic incident does not recur (UCS) (Resick, 2001).

For instance, the rape victim used as an example in the previous section may become very anxious and distressed if she is expected to leave her home during the evening. This can result in her avoiding parking places and leaving lights on at night. She may even make a conscious effort to avoid thinking about the incident in order to escape the accompanying distress. This type of behavioural pattern prevents the victim from learning that these situations such as parking lots and darkness, and thoughts of the incident are not dangerous but that they may lead to chronic PTSD symptoms (Resick, 2001).

### **2.3.3 Cognitive behavioural theories**

This cluster of theories claims that the interpretation of the incident and not the incident itself influences the victim's emotional state. Similarly, pathological emotions originate from dysfunctional interpretations of events, for instance, the overrating of danger may lead to a pathological fear in one's life. Cognitive-behavioural therapy was originally developed to treat depression and later also anxiety disorders. The aim of this approach was to modify a client's dysfunctional thought patterns and in the process alleviate any pathological emotions (Shalev, Yehuda, & McFarlane, 2000).

#### *2.3.3.1 Information processing theory*

This theory focuses mainly on the intrusion symptoms of PTSD, such as the repetitive memories of a traumatic event (Resick, 2001). Foa, Steketee, and Rothbaum (1989) theorised that PTSD originates as a result of a fear network situated in the victim's memory which evokes escape and avoidance behaviour. Any type of stimuli associated with the original traumatic incident may give rise to the fear schemata and avoidance behaviour. This fear network is stable and can easily be accessed by victims suffering from PTSD. Chemtob, Roitblat, Hamada, Carlson, and Twentyman (1988) claim that these structures are always switched on in people with a PTSD diagnosis and this channels their interpretation of events as being potentially hazardous. When victims are confronted with reminders of the trauma

these cues may activate their fear network which may result in intrusion symptoms. Trying to avoid this fear activation may evoke the avoidance symptoms of PTSD. In order to counter this activation, information processing theory proposes that repetitive and prolonged exposure to the traumatic memory in a secure environment may lead to positive changes in the fear structure of the PTSD victim. However, the converse is also true, short spells of trauma exposure will only intensify avoidance behaviour and sustain the disorder (Resick, 2001).

### 2.3.3.2 Social-cognitive theories

Unlike the information processing theory, which only focuses on information processing and elements of fear, social-cognitive theories also include the effect of the trauma on the victim's belief system as well as the reconciliation between the individual's prior beliefs and the traumatic incident. According to Horowitz's (1986) cognitive processing theory, people have a "completion tendency" to integrate new irreconcilable information within their existing beliefs about the self and the world. This ensures that traumatic information stays active in the victim's memory until processing is finalised and the incident resolved. Unfortunately for the trauma victim there is a basic conflict between the completion tendency and the aspiration to evade emotional pain.

When post-traumatic symptoms such as flashbacks and nightmares strike and emotions overwhelm the victim's psychological defence mechanisms the person may display apathy or avoidance behaviour. Chronic PTSD indicates that the traumatic incident is still active in the affected individual's memory and that integration was therefore not successful, resulting in intrusive and avoidance reactions (Resick, 2001).

Other social-cognitive theorists have focused their attention on shattered assumptions and the content of cognitions. Janoff-Bulman (1985, 1992) claims that three main assumptions are shattered in people when a traumatic incident strikes: The first assumption involves a conviction in personal invulnerability, for instance, *That will not happen to me* and, secondly, the assumption that the world is a significant and just place which can be controlled, and the last assumption entails the perception of the self as deserving or positive.

After a traumatic incident these assumptions are shattered which may lead to a psychological crisis in the form of cognitive disintegration and anxiety. Janoff-Bulman (1992) further claims that two types of self-blame can be observed in trauma victims. In behavioural self-blame the individual attributes the event to his or her own actions or a mistake that was made by the individual. During character logical self-blame the individual blames himself or herself because of who or what he or she is (e.g., *The incident happened to me because I am a bad human being*).

Regarding the content of cognitions, McCann and Pearlman (1990) theorised that certain areas of cognition, for example, intimacy beliefs of people may be unsettled by traumatic experiences. Other areas of cognition include safety, trust, control, and esteem. According to their Constructivist Self Development theory, psychological needs provide the foundation for core schemas about the self and the world. In this case, intimacy refers to the need of human beings to feel connected to other people through individual relationships and safety refers to the need to feel safe in their environments (Rotter, 1954 as cited in Resick, 2001). Disruptions in schemas can be very upsetting, especially when they appear in people's areas of need that are most important to them. In order to understand whether cognitive disruption plays an important role in trauma survivors, Mechanic, Resick, and Griffin (1994 as cited in Resick, 2001) made use of a longitudinal study on rape victims. After 2 weeks following the incident, victims meeting the PTSD criteria (not considering the one month time criterion which is a prerequisite for a formal diagnosis) had experienced more disruptions in their belief system concerning esteem, intimacy, safety, and trust when compared with other rape victims who did not meet PTSD symptomatology. Three months after the event victims suffering from PTSD still faced more disruptions in safety, trust, and intimacy than did their counterparts.

#### 2.3.3.3 Dual representation theory

Brewin, Dalgeish, and Joseph (1996) attempted to unite the different cognitive theories of PTSD by introducing a comprehensive dual representation theory which includes information processing as well as social cognitive theories. They theorised that two types of memory play

a role during sensory input. Verbally accessible memories (VAMs) function on a conscious level and can easily be retrieved. These memories include the following material from the traumatic incident: Sensory information, reminders about emotional and physical reactions, and personal meaning. VAMs are characterised by selectivity which means an individual's attention span is restricted due to the stressful event and his or her short term memory may also be hampered.

On the other hand, situation ally accessed memories (SAMs) operate on a non-conscious level which means that this type of memory is not wilfully accessible to the person involved. SAMs are also not changed or edited with ease as opposed to VAMs. This second type of memory constitutes sensory information (e.g., visual or auditory in nature or both), physiological and motoric information which may be accessed by the trauma victim when he or she is confronted by a situation which may appear to be similar to the original traumatic incident. Even thinking of the traumatic event on a conscious level may evoke intrusive images along with physiological arousal symptoms.

The dual representation theory proposes two types of emotional reactions after a traumatic event. The first type of reaction is conditioned during the original incident (e.g., the emotions of fear and anger) and is captured in the SAMs. The other type of reaction, which is referred to as secondary emotions, originates from the effect (or meaning) of the traumatic incident. Secondary emotions not only include fear and anger, but also guilt, shame, and sadness. According to Brewin *et al.* (1996), traumatic emotion processing consists of two parts.

The first part is responsible for the activation of the SAMs and the goal is to assist in cognitive readjustment. The frequency of SAMs may decrease over time due to the creation of novel SAMs or the assimilation of new information. If SAMs are substituted or modified adequately, they may result in less negative symptoms and reduced attention bias.

The second part of processing makes an effort to search for meaning, assign blame or reason, and assimilate the event with the previous belief system. The purpose of this is to decrease negative emotions and to recover some sort of safety sense and control in the life

of the person involved.

Brewin *et al.* (1996) theorised that emotional processing could consist of three outcomes: The first outcome involves completion or integration; the second, chronic emotional processing; and the third, the premature inhibition of processing. In the first instance, the individual is successful in resolving his or her traumatic incident by integrating the trauma with his or her previous beliefs. Chronic emotional processing takes place when the incident has not been fully integrated due to the following reasons: Recurrent and fierce trauma, the absence of support, avoidant coping style or the experience of negative secondary emotions such as guilt or shame or both. This type of processing is recurrent which results in diminutive changes in the SAMs and VAMs of the individuals. Lastly, a third outcome is also possible with no research or even clinical literature available to date to confirm it. Brewin *et al.* (1996) claim that emotional processing can be inhibited due to a person's attempts to elude the reactivation of negative SAMs and VAMs. If this elusive strategy works, an automatic process follows which allows individuals to redirect their attention span away from recollections of traumatic incidents. Unfortunately, SAMs are still a reality for the trauma victim because this type of memory can still be evoked under certain conditions. This may explain the delayed onset of PTSD in certain individuals or even the intrusion symptoms of a previous incident later in life when confronted by a different trauma.

Although Freud's psychodynamic theory made a huge contribution towards our current understanding of PTSD symptoms, for example intrusive symptoms such as flashbacks and physiological reactivity, his theory can unfortunately be criticised for ignoring the role of culture or social factors in violence and traumatic events. In South-Africa particularly, a culture of violence reigns that is largely responsible for aggression and sexual assault against women and children. Thus, it is debatable whether Freud's theory could be applied successfully to the South African context. The strength of the learning theory lies in the employment of both classical and operant conditioning in terms of explaining PTSD symptoms. Classical conditioning is useful for addressing fear and distress symptoms, and operant conditioning can be utilised to explain avoidance symptoms and the maintenance of fear in PTSD sufferers. Unfortunately, this theory overemphasises "environmental variables" and excludes the cognitive interpretation of events and a freedom of choice which are

fundamental aspects of human beings. Although cognitive-behavioural theories include the cognitive dimension of PTSD (e.g., the interpretation of the event, the effect of the traumatic event on the trauma victim's belief system and the two types of memories involved during sensory input), this theory omitted to include the neuropsychological (biological) factors which are responsible for maintaining certain PTSD symptoms. As mentioned previously, soldiers with war-related PTSD revealed damage to the hippocampus region of their brains which is responsible for learning and short term memory (Gurvits *et al.*, 1996). Therefore it could be theorised that VAMs, which are selective in nature regarding attention span and biological factors, are both responsible for the lack of short term memory in PTSD victims. A more comprehensive theory will include both psychological and biological dimensions of PTSD.

Although theories of trauma contribute to our understanding of already established PTSD, they do not explain which preventative measures can be taken to possibly prevent PTSD development. Debriefing as a *psychological first aid kit* is often used in contemporary society after a person has been exposed to a traumatic event. Before discussing the different debriefing models available, an historical overview is furnished regarding the development of this trauma intervention tool.

## **2.4 HISTORICAL OVERVIEW**

The historical development of debriefing can be traced back to World War I when it was found that treating bomb shocked soldiers near the war front appeared to prevent psychological difficulties (Salmon, 1919 as cited in Armstrong, Lund, McWright, & Tichenor, 1995). The term *shell shock* was first introduced in 1915 by Charles S. Myers, a British psychiatrist. These early interventions evacuated traumatised soldiers from the frontlines to medical facilities and sometimes resulted in a discharge from further military service. The diagnosis of shell shock caught on *like wild fire* among British soldiers and created the impression that shell shock was contagious. This resulted in the abandonment of such a diagnosis by Myers in 1916. At the end of World War I it was realised that early evacuation from the frontlines was detrimental to a soldier's mental state because it reinforced perceptions of personal failure and leaving his *brothers in arms* behind (Orner & Schnyder,

2003).

During World War II, chief combat historian S.L.A. Marshall of the United States Armed Forces was the first to practise *debriefing*, although not as a psychological intervention strategy. The goal was to *explore the truth* by collecting descriptions of combat events without attempting to address their psychological impact on soldiers. This debriefing took place in a warm and supportive atmosphere (Marshall, 1944). Colonel S.L.A. Marshall promoted *group talks* and paved the way for the development of military psychiatry, focusing on protection factors such as group cohesion, leadership, and motivation (Ahrenveldt, 1958 as cited in Orner & Schnyder, 2003). Unfortunately, lessons learned from World War I were set aside and traumatised soldiers were once more evacuated from the frontlines. The expertise of Colonel A. Glass, a United States Army psychiatrist, was called in and he implemented the BICEPS intervention programme which resulted in a significant reduction of psychiatric casualties. BICEPS is based on the following principles: brevity, immediacy, centrality, expectancy, proximity, and simplicity (Glass, 1954 as cited in Orner & Schnyder, 2003).

During the Korean and Vietnam Wars, methods of group stress debriefing were further developed by mental health care professionals. Although the Vietnam War brought PTSD to the attention of the public and human service professionals (Gilliland & James, 1993), not much could be done by the military or civilian psychiatric services to neutralise the effects of rejection of soldiers by their own nation as this war had long been publicly criticised by some American citizens, due to its lack of meaning and purpose (Orner & Schnyder, 2003).

The Israeli Army was the first to really notice and acknowledge the benefits of crisis intervention (Medical Department, 1973 as cited in Colley, 1995). After the 1973 war there were large numbers of psychiatric patients which accentuated the need for an initiate crisis intervention as a standard procedure on the Israeli front. Colonel R. Gal from the Israeli Army's Department of Behavioural Sciences developed a system whereby psychologists became part of the battlefield.

The brief interventions which were initially only used in a military context were subsequently

applied to mass disasters such as earthquakes and plane crashes as well (Plaggemars, 2000). After the Washington air crash in January 1982, Mitchell implemented his first application of Critical Incident Stress Debriefing (CISD). Emergency personnel, such as the police, fire fighters, and paramedics, who attended this formal debriefing regarded this process as very helpful and positive (Mitchell, 1983). The purpose of CISD was to allow groups or individuals to re-experience the traumatic event in a safe environment (Armstrong *et al.*, 1995).

There are several variations of formal debriefing, but it appears that most of them have some kind of relation with the *original* Mitchell CISD model. Over the years, some models were modified to be more flexible and adaptable to fulfil the requirements of a specific emergency environment (Moran, 1998). Armstrong and his fellow colleagues developed a multiple stressor debriefing model to address multiple stressors over an extended period of time, especially during relief operations. This model incorporated an additional  *coping*  phase that was designed for disaster relief personnel (Armstrong, O' Callahan & Marmar, 1991).

Trauma debriefing has become an accepted and widely used strategy following the exposure of a human being to a traumatic event (Hokanson & Bonnita, 1996). Debriefing is viewed as being mandatory and a *quick fix* for any person experiencing traumatic events (Dunning, 1999; Violanti, 2000). Even in the SAPS this quick fix fallacy exists, although debriefing is completely voluntary.

## **2.5 DEBRIEFING MODELS: A PREVENTATIVE APPROACH**

There are several variations of formal debriefing, but it appears that most of them have some kind of relation with the original CISD model.

According to Warheit (1988), most debriefing models have several key components in common that can be summarised thus:

- Evaluating the impact that traumatic incidents have on people;
- Identifying safety and security matters;
- Ventilating of feelings and thoughts and the acknowledgement of reactions;
- Predicting and teaching possible future reactions;

- Exploring factual data relating to the critical incident;
- Providing some kind of relief, usually in the form of closure, and *aligning* people to community resources; and
- Motivating and assisting traumatised people to return to their place of employment.

### **2.5.1 Mitchell model (Critical Incident Stress Debriefing (CISD))**

This debriefing model was developed by Jeffrey Mitchell and was originally designed to alleviate or even prevent symptoms of post-traumatic stress in emergency personnel who were exposed to traumatic incidents (Hokanson & Bonnita, 1996; Irving & Long, 2001). The Mitchell model was originally designed for group usage, but later variations of this approach that catered for individuals, couples, and even families were developed (Mitchell & Everly, 1997). Debriefing is usually conducted after two to fourteen days after the traumatic incident occurred and in the case of mass disasters, for instance the September 11 terrorist attacks (Van Emmerik, Kamphuis, Hulsbosch & Emmelkamp, 2002), it is conducted three to four weeks after the disaster (Everly & Mitchell, 2000).

Critical incident stress debriefing is not psychotherapy nor is it a critique of the operational procedures used by emergency personnel (Leonard & Alison, 1999), or even a form of self-help (Dyregrov, 1997), but rather one of the many models that can be used as a crisis intervention technique (Leonard & Alison, 1999). Other examples of debriefing models include the Three Stage Revised Model and the Emotional Decompression Model (Kinchin, 2007). CISD is a subcategory which is encapsulated within the broader CISM package (Bendersky-Sacks, Clements, & Fay-Hillier, 2001) and educates the participants regarding stress reactions, ways of coping, and making referrals if needed (Mitchell & Bray, 1990).

The Mitchell model, with its seven phases, is described in Table 2.3.

Table 2.3

*Mitchell's Model*

Phase one	Introduction	In this phase the debriefing team introduces themselves and explains the purpose of the meeting.
Phase two	Facts	During this phase each participant is afforded an opportunity to share his or her role during the incident with other group members (e.g., "How did you come into contact with the incident?").
Phase three	Thoughts	In this stage each participant shares the first thoughts that came to his or her mind during the traumatic event.
Phase four	Reactions	During this phase participants are requested to recall what they regarded as being the worst or even the most difficult aspect to manage regarding the incident.
Phase five	Symptoms	In phase five, participants are expected to reflect on any physical, emotional, or behavioural symptoms they may have experienced.
Phase six	Teaching	During this stage, participants are informed of the possible stress symptoms which may be experienced and whether these may be regarded as being normal reactions to critical incidents. In addition, steps for managing this distress will also be relayed to recipients.
Phase seven	Re-entry	In the final phase the facilitators will afford ample opportunity for questions, clarification of uncertainties and an overall summary of the whole process.

---

(Mitchell & Everly, 1993).

According to Mitchell and Everly (1993), CISD has the following goals:

Participants are reminded that their reactions are normal with regard to an abnormal event and they are encouraged to reinterpret their responses of guilt and anger. Debriefing also provides reassurance to the trauma victim that the stress reaction is manageable and that participants are able to cope. Another goal of CISD is to reduce the fallacy of uniqueness amongst victims of trauma and to clarify misconceptions regarding the incident. During the debriefing session, participants are also educated about possible future symptoms they may

experience and also to enhance group cohesion. A final goal of CISD is to assess those participants who still struggle with traumatic symptoms and may need further follow-up sessions.

Unfortunately, the CISD model has received criticism in the past few years for the following reasons:

Firstly, participation in debriefing is often compulsory in the emergency services which may lead to animosity towards the process. Secondly, overt sharing and summarising of very graphic and disturbing details of the event may lead to secondary traumatisation amongst participants. Thirdly, labelling the reactions of trauma victims as pathological may lead to unnecessary anxieties which could interfere with their normal healing process. Fourthly, advocates for CISD claim that this intervention method is suitable for all traumatised participants without taking their special circumstances into consideration. Another critique against CISD is that the facilitator in this process and not the client is considered to be the expert (Slawinski, 2005). Lastly, the model does not acknowledge or consider any positive outcomes (personal growth) that may arise from traumatic experiences (Lyons, 1991).

### **2.5.2 The Dyregrov model (Process Debriefing) (PD)**

This model was developed by Atle Dyregrov and like the original Mitchell model also consisted of seven stages (Kinchin, 2007), but more focus was placed on group processes such as: “The strong mobilization of group support and the active use of the group as a resource” (Dyregrov, 1997, p. 591).

According to Dyregrov (1997), debriefing could also have potential negative effects on a group. For instance, group domination by one of the members may lead to group conflict and poor facilitation of the group could result in residual feelings such as anger and bitterness amongst participants. Another negative effect of debriefing is the sharing of confidential information by participants outside the debriefing context. Especially in the law enforcement sector this could have a detrimental effect on further investigations, for example in a shooting incident. Also, the promotion of incorrect information regarding coping skills and

normal reactions used by participants may lead to complications in the healing process. Lastly, debriefing could also destabilise psychologically unstable participants. This is especially true for clients who already suffer from pre-existing psychological disorders such as anxiety disorders.

### **2.5.3 The Jacobs model**

Similar to CISD, this model was based on the notion that emergency personnel, in this case police officers, have adequate internal resources to deal with most of the daily events that they encounter, but extra assistance could be beneficial in certain instances, especially with regards to traumatic experiences (Regehr & Bober, 2005).

The Jacobs model consists of the following phases:

- Introductory phase;
- Fact phase;
- Thinking phase;
- Feeling phase;
- Stress reaction phase;
- Stress management phase; and
- Final phase (Jacobs, 1993).

It is important to note that these different phases do not necessarily follow a mechanical sequence, but they may at times blend together. Typically, debriefing takes place within 24-72 hours after the critical incident (Miller, 2006). Treatment usually comprises a single group or individual sessions, with a follow-up session in the ensuing week. During the initial session, the facilitator invites participants to share their traumatic experiences within its cognitive, affective, and behavioural contexts (Kaplan, Iancu, & Bodner, 2001). After the debriefing session, participants are expected to return to their normal routines and duties which may be therapeutic. This provides an opportunity for them to rely on extended social support in the form of informal discussions between those involved in the traumatic incident (Paton & Stephens, 1996).

In the SAPS, debriefing is structured according to specific principles that were derived from the former South African Defence Force (SADF). These principles were referred to as the SPIE and IMPRESS A RAVEN models (Crafford, 1992).

These abbreviations will now be discussed in further detail:

- **SPIE**

S **Simplicity:** Treatment must be simple and practical.

P **Proximity:** A traumatised member must be debriefed in close proximity to their working environment.

I **Immediacy:** Treatment must be implemented as soon as possible after the critical incident, within the 72 hour time frame.

E **Expectancy:** Members must be encouraged to resume their normal duties as soon as possible.

- **IMPRESS A**

I **Immediacy:** Treatment should be given as soon as possible after the incident.

M **Military milieu:** Operational duties must be executed in uniform as far as possible.

P **Proximity:** Affected personnel must receive treatment in the vicinity of their command unit.

R **Rest and replenishment:** A period of rest for physical and psychological recuperation must be allocated to affected members.

E **Expectancy:** Members must be informed of the expectation to resume their normal duties.

S **Simplicity:** Debriefing must be practical and simple to use and must not be based on diagnostic criteria.

S **Supervision:** The condition of the affected member must be continually monitored by professionals in the Employee Health and Wellness section.

A **Activity:** It is important for members to stay involved in their original units and therapeutic activities.

- **RAVEN**

- R **Reaction:** Members' attention must be drawn to the fact that certain symptoms can be the result of the critical incident.
- A **Awareness:** Affected personnel must be made conscious of their feelings, emotions, and thoughts on a regular basis regarding the incident.
- V **Ventilation:** Encourage members to give expression to their feelings.
- E **Encouragement:** Members must be encouraged to express their emotions to a significant other and also during the debriefing procedure.
- N **Normal behaviour:** Assist affected members to realise that the symptoms they may experience are normal reactions (Crafford, 1992).

## **2.6 SAPS MULTIPLE STRESSOR INTERVENTION: PROCEDURE AND LESSON PLANS**

As previously stated in Chapter 1, the multiple stressor intervention was specifically developed and designed for members employed at the SAPS high risk units (e.g., intervention units, special task force, and crime scene photographers). To initiate this intervention, a target group from these units first needs to be identified, followed by a meeting with them. Then, after group formation, group goals and aims need to be established. This is known as the preparation phase and is similar to the Jacobs model introduction phase. Subsequently, the topics that will be presented as lesson plans will be established according to the particular group needs and this should be identified by the facilitator after each group session (SAPS, 2008).

Before a lesson plan is presented, a short ventilation (sharing of emotions) phase is scheduled, consisting of Facts, Thoughts, and Feelings. These three phases are similar in title to phases two, three, and four of the Jacobs model, but are not completed in depth and serve a ventilation purpose only. This means that group members have the opportunity to verbalise their different traumatic experiences and feelings of the past two months which impacted on their lives without exploring them in depth (SAPS, 2008).

Lesson topics and the purpose of each plan are presented in Table 2.4.

Table 2.4

*Multiple-Stressor Intervention Lesson Plans*

Topic	Description	Purpose
1	Adventure-based team development (experiential learning)	This type of training makes use of structured outdoor exercises that provide solutions for real workplace situations.
2	Accepting personal responsibility	Accepting personal responsibility in our own lives (e.g., you are responsible for choices made in your own life).
3	Anger management	To manage anger in an effective manner.
4	Bereavement	To be able to deal with the death (loss) of a significant other.
5	Burnout	The identification of burnout symptoms and taking control of it.
6	Cognitive restructuring	To identify the different thought distortions and teach learners how these distortions can influence our reactions and emotions.
7	Conflict management	To handle conflict in a constructive manner.
8	Coping and hardiness	To teach learners to change their perceptions of stress triggers in order to cope with negative stress in a constructive way.
9	Depression	To make a distinction between feeling blue, and clinical depression.
10	Ego defence mechanisms	To understand and identify ego defence mechanisms at work.
11	Emotional intelligence (EQ)	To educate learners on the benefits of EQ in contrast to Intelligence Quotient (IQ).
12	Having fun	To be able to have fun in one's own life and just relax.
13	Finding meaning and purpose in life	To make the learner aware that meaning and purpose in one's life can significantly contribute to a sense of well-being.
14	Inner child	To rediscover and nurture your own inner child.
15	My life story (narrative therapy)	To declare moments of hope in my own life story.
16	Relationships	To use effective interpersonal skills in order to build and foster healthy relationships.
17	Trauma	To identify traumatic (critical) incidents and how to cope with them.
18	Management of trauma	To identify triggers of trauma and how to deal with them.
19	The emotional effects of stress	To educate learners about the aftermath of trauma and how it affects them.
20	Stress management	To inform learners about ways to cope with stress.
21	Stress reactions	To recognise stress and its reactions.

(SAPS, 2008).

## 2.7 SUMMARY

This chapter commenced with definitions related to the field of trauma. The focus fell on definitions of crisis, trauma, critical incidents, debriefing, Critical Incident Stress Management (CISM), and Post Traumatic Stress Disorder (PTSD) followed by the DSM-IV-TR classification for PTSD. The second part of this chapter discussed the different theories of trauma. Specific attention was afforded to three main psychological theories of trauma, namely the Psychodynamic theory, Learning theory, and Cognitive-behavioural theories.

Next, the focus fell on the history of debriefing and its usage within the military (World War I, World War II, the Korean War, and Vietnam War) and civilian contexts, followed by the three different models of debriefing. The discussion commenced with the Mitchell model which was implemented after the Washington air crash of 1982; today this mass disaster is regarded as the “birth” of the CISD model (Plaggemars, 2000). This model was followed by another well-known debriefing model developed by Dyregrov (1997). The Jacobs model was adapted from the original Mitchell model for South African conditions and used within the South African Police Services (SAPS). This chapter concluded with a discussion of the SAPS multiple stressor intervention programme and its different lesson plans which were specifically designed to address trauma at the high risk units of this organisation.

## **CHAPTER 3**

### **LITERATURE SURVEY**

#### **3.1 INTRODUCTION**

The first part of the chapter discusses the types of evidence utilised to evaluate the efficacy of psychological interventions. Attention is afforded to anecdotal reports or satisfaction surveys, cross sectional design studies, and randomised controlled trials. Further, this chapter not only discusses research studies supporting Critical Incident Stress Debriefing (CISD), but also studies that do not support its efficacy. The chapter concludes with a problem formulation and its accompanying hypotheses.

#### **3.2 TYPES OF EVIDENCE USED TO JUDGE THE EFFICACY OF AN INTERVENTION**

A critical question still remains: “How effective is debriefing?” Before reviewing the literature it is important to furnish a short introduction of the three main types of evidence that are used to judge the efficacy of psychological interventions, especially crisis debriefings (Regehr & Bober, 2005).

##### **3.2.1 Anecdotal reports and satisfaction surveys**

Anecdotal reports relegate to the clinical impressions of practitioners who had provided debriefings to clients. In other words, was the service useful or not? Clinical reports in this format usually describe the original distress experienced by the group as well as the possible relief experienced after receiving the intervention. Research conducted by Lane (1994) concerning nurses in a community hospital attests to this sort of crisis intervention being very helpful and also appreciated by the recipients. Satisfaction surveys on the other hand were employed as feedback reports from participants after interventions had taken place. They usually included questions such as: “Did the symptoms decrease after the intervention?” and “Did you find the intervention helpful?” These surveys were collected afterwards and the outcomes were then summarised by the facilitators of this process. A survey of 682 emergency room nurses conducted by Burns and Harm (1993) indicated that

32 % of these health care workers attended debriefing sessions and that 88 % of those attendees found debriefing to be helpful. Unfortunately, these surveys have a limited capacity to show the effectiveness of an intervention because the subjective perceptions of clients regarding whether debriefing is helpful or not is not necessarily related to lower post traumatic stress symptoms.

### **3.2.2 Cross-sectional design studies**

In this second design type, debriefed groups are surveyed at a specific point in time concerning their experiences and present emotional state. Emergency responders such as police officers are firstly questioned about the traumatic events they had encountered such as riot duties, the treatment thereof such as CISD, and their level of symptoms in the current timeframe. Research on fire fighters conducted by Regehr and Hill (2000) demonstrated a cross sectional design. In this study, most of the firemen who attended a debriefing session rated the intervention as being helpful, but when psychometric instruments such as the Beck Depression Intervention (BDI) and the Impact of Event Scale (IES) were introduced, a different picture emerged.

The results indicated that those individuals who had received debriefing obtained higher scores on both the IES intrusion subscale and the BDI in comparison with those firemen who did not attend the sessions. This implied that subjective perceptions regarding whether debriefing is helpful or not are clearly unrelated to the scores obtained on the two psychometric scales. In conclusion, this type of design also presented difficulties in showing the efficacy of interventions because causality cannot be accepted blindly just because two factors occurred simultaneously.

### **3.2.3 Randomised controlled trials (RCT)**

In this design type, researchers selected a group of people who had experienced a similar event and then randomly assigned them either to a treatment or a control group. This latter group would receive no treatment or even be placed on a waiting list for future treatment after the research had been completed. RCTs are considered to be the most rigorous form of

research when evaluating intervention efficacy. Research undertaken by Campfield and Hills (2001) compared the results of immediate debriefing (services offered in less than 10 hours after the incident) with delayed debriefing (more than 48 hours after the event). The researchers focused on bank tellers who had been involved in a robbery. At three different time intervals (2 days, 4 days, and 2 weeks) the group that had received immediate debriefing indicated significantly lower trauma symptoms when compared with that of the delayed intervention group. The researchers found debriefing to be more effective when offered to the victims of trauma within the first few hours after the critical incident.

### **3.3 CRITIQUES AGAINST CRITICAL INCIDENT STRESS DEBRIEFING (CISD)**

Unfortunately, the results of different studies investigating the effectiveness of debriefing, especially with CISD, have been equivocal (Kaplan *et al.*, 2001). These equivocal results can be attributed to the lack of clarity regarding the timing of the crisis intervention (e.g., was debriefing offered within the prescribed 24-72 hours after the incident?), the length of the debriefing sessions (e.g., debriefing should take approximately 1-3 hours to conduct), group sizes (e.g., groups should consist of 2-3 participants and one debriefer), and the heterogeneity of the groups involved, for instance, can the participants in both the intervention and control groups be compared in a randomised controlled trial? (Dyregrov, 1997).

Two studies even indicated that debriefed subjects might fare worse compared with those who were not debriefed (Hobbs, Mayou, Harrison, & Worlock, 1996; Bisson, Jenkins, Alexander, & Bannister, 1997). Hobbs *et al.* (1996) included traffic accident victims in their study and employed randomisation to assign subjects to either a control or an intervention group. Unfortunately, the participants in the two groups differed significantly and as a result were not comparable with one another. Subjects of the debriefing group obtained higher injury scores and had prolonged hospital stays in comparison with the control group subjects (Kaplan *et al.*, 2001). Another methodological bias in this study was the criteria of subject inclusion. This study excluded traffic accident victims who did not display initial psychological symptoms, had been discharged from hospital or were unavailable for the research study (Kaplan *et al.*, 2001). On the other hand, the Bisson *et al.* (1997) study also used

randomisation to assign burn victims to either a control or an experimental group. Even with the help of randomisation, the intervention group revealed more serious injuries and financial difficulties in comparison with the group that had not been debriefed (Everly & Mitchell, 2000). Meaningful group comparison in this case is thus doubtful.

During the 1990s an increased scepticism prevailed among mental health care professionals concerning the poor outcomes of CISD usage in addressing post traumatic stress (Conlon & Fahy, 2001). In the first Cochrane review, researchers analysed eight trials which employed randomisation and single session debriefing as outcome measures. They found no evidence to confirm that a single session of individual psychological debriefing reduces psychological distress or even prevents the onset of PTSD (Rose, Bisson, & Wessely, 1998). In an updated Cochrane review on debriefing, Rose and her colleagues included eleven trials. These trials also used randomisation in ten out of eleven trials and the researchers found a neutral outcome when psychological debriefing was used (Rose, Bisson & Wessely, 2001). In the latest Cochrane review, researchers included fifteen trials in their meta-analyses. A meta-analysis refers to a statistical method employed to integrate the results of independent investigations (in this regard debriefing) by summarising their effectiveness globally (Wolfaardt, 2002). The types of studies which they included consisted of fourteen randomised trials and one quasi-randomised trial. The types of outcome measures that were used comprised: rates of PTSD, general psychological morbidity, depression and anxiety, general psychiatric morbidity, drop-out from treatment, and lastly, general functioning.

The authors concluded that single session individual debriefings did not prevent PTSD in clients nor did they reduce clients' psychological distress. More specifically, one trial even indicated a significantly increased risk of causing PTSD in clients who received debriefing. Other findings showed no reduction in the severity of PTSD in debriefed individuals at 1-4 months, 6-13 months, or 3 year intervals respectively. Lastly, these researchers did not find any form of evidence to prove that this type of intervention had reduced general psychological morbidity, depression, or even anxiety (Rose, Bisson, Churchill, & Wessely, 2009).

Methodologically, the following objections were raised against the Cochrane reviews:

- Any type of single session psychological intervention was included in these reviews, ranging from “crisis intervention, psychiatric stress debriefing, multiple stressor debriefing”, and so forth. The term *debriefing* was used to describe a variety of different interventions (Everly, Boyle, & Lating, 1999). Can these other interventions truly be called debriefing and what type of standard was maintained by them?
- Most of the debriefing sessions occurred within the suggested 24-72 hour interval period, but in certain instances the intervention was only delivered to recipients after a period of 2 weeks or even 1 month which led to biased results.
- In certain instances groups were directly comparable with each other, but not in all cases.
- In some of the studies incomplete data have negatively influenced the research findings. For instance, Hobbs *et al.* (1996) excluded subjects who did not display any psychological symptoms from his findings, and Stevens (1996 as cited in Rose *et al.*, 2009 p. 8) excluded participants who showed “undue distress”.

In two other studies, which also used RCTs as their methodological cornerstone, researchers found debriefing to be ineffective in protecting individuals from PTSD symptoms (Litz, Gray, Bryant, & Adler, 2002; Lilienfeld, 2007). Other researchers examined the relationship between stress debriefing and stress symptoms in 288 emergency personnel who worked with traffic accident rescue services. With the help of the Impact of Event Scale (IES), they found that personnel who attended debriefing had higher levels of symptoms at a 12 month interval, compared with those who did not attend (Griffiths & Watts, 1992).

In a more recent longitudinal study on 74 New Zealand police officers, researchers came to a similar conclusion as in the Griffiths and Watts (1992) study. Their participants also rated debriefing as being beneficial (positive) but this perception did not correspond with the overall effectiveness of debriefing in preventing PTSD symptoms in subjects. The methodological weaknesses of this study can therefore be attributed to non-randomisation of groups and the usage of both individual and group debriefings (Addis & Stephens, 2008).

In a 3 year longitudinal study on hospitalised road traffic accident victims, researchers concluded that the intervention group had a significantly worse outcome in terms of general

psychiatric symptoms and overall functioning compared with the control group (Mayou, Ehlers, & Hobbs, 2000). Although the Mayou *et al.* (2000) study used a control and intervention group, it can be criticised for its inability to make use of group debriefings instead of individual debriefings which is a prerequisite for a correct debriefing procedure. These researchers also used medical patients as subjects which were clearly in conflict with the intended purpose of debriefings where the focus usually falls on emergency service personnel involved in traumatic incidents. Another negative outcome was reported by Kenardy and his colleagues in their study on 195 helpers involved in relief operations after an earthquake. In this study, 62 subjects were debriefed in comparison with 133 helpers who did not receive this intervention. Unfortunately, the authors of this study could only “assume” that the recipients of debriefing actually received this service as no standardised form of debriefing was followed. Another possible form of bias ensued from the differences between the two groups. These groups differed from each other regarding their demographics and occupational attributes which significantly influenced the final results. The debriefed subjects rated debriefing as being positive, but their improvement rate was similar to that of the helpers who were not debriefed. This study is very often cited as explicit evidence that debriefing is not effective (Kenardy *et al.*, 1996; Kaplan *et al.*, 2001; Miller 2006; Scott & Stradling, 2006).

In retrospect, it appears that the studies that reported a negative effect or no effect of debriefing suffer from the following methodological weaknesses:

- These studies used interventions that cannot truly be called psychological debriefing. Also, they did not clearly define what constituted the debriefing process.
- Interventions were mostly administered outside the recommended period for debriefings. It is usually recommended that debriefings take place between 24-72 hours after the incident whereas in some studies they only took place weeks or even months afterwards.
- The background and training of the debriefers were unclear. Were these “debriefers” formally trained in CISD or in other types of interventions? This question remains unanswered in these studies (Kinchin, 2007).

Although the methodology of these studies can be criticised, it should be pointed out that research on PTSD is difficult to conduct due to the fact that this disorder does not lend itself to true experimental approaches. For instance, in the field of critical incidents, withholding interventions (e.g., debriefing services) from subjects for research purposes is unethical, especially if these participants could have benefited from such an intervention strategy (Deahl, 2000). Also, these types of events are very unpredictable (Malcolm, Seaton, Perera, Sheehan, & Van Hasselt, 2005) which makes planning for or even studying them even more difficult (Slawinski, 2005). Also, PTSD symptoms tend to weaken naturally over time which complicates research on the efficacy of interventions (Foa *et al.*, 1995).

### **3.4 ADVOCACY FOR CISD**

On the other side of the debriefing continuum, different studies actually “proved” the effectiveness of psychological debriefing, for example, the study on emergency medical personnel conducted by Robin & Mitchell (1993, 1995); the study on rescue personnel in the sinking Estonia performed by Nurmi (1994); the study on police undertaken by Bohl (1991); the study on emergency medical personnel in the wake of a mass shooting conducted by Jenkins (1996); and the study on emergency medical technicians subsequent to the Los Angeles riots undertaken by Wee, Mills, and Koelher (1999) as cited in Everly and Mitchell (2000; Miller, 2006). Everly and Boyle (1999) employed a meta-analysis in five of these studies in order to counter systematic error, by compensating for the lack of true randomisation in the original studies and offering the researchers a larger subject pool originating from diverse populations, settings, and different investigators. The researchers found debriefing to be clinically effective in clients who received this type of crisis intervention. Deahl and co-workers employed a truly randomised investigation consisting of both control and experimental groups. They found that CISD was not only effective in reducing alcohol usage, but also reduced symptoms of anxiety, depression, and PTSD amongst 106 British soldiers deployed at a United Nations peacekeeping mission (Deahl *et al.*, 2000).

In order to counter the subjective interpretations of researchers in narrative interviews during debriefing efficacy studies, Mullen (1989 as cited in Everly *et al.*, 1999, p. 230)

suggested employing a meta-analysis “as a more precise, objective and compelling exercise in the conduct of inquiry”. In this study, Everly *et al.* (1999) included ten controlled studies which had appeared in peer reviewed journal articles as well as studies from clinical procedures. Although this is a very small sample for a meta-analysis, only 10 empirical investigations out of the original 14 studies were applicable to the emergency and trauma medicine field. A total of 698 subjects were included in this analysis and Cohen's *d* was used to indicate the effect size (Cohen's *d* is the most frequently used index of statistical power in a meta-analysis). In this review, Everly *et al.* (1999) found a positive mean effect size (Cohen's  $d = 0.54$ ;  $p < 0.01$ ) which demonstrated that debriefing was clinically useful in relieving psychological stress in different types of critical incidents such as shooting incidents, natural disasters (hurricanes), and riots. Unfortunately, the following objections were raised against this meta-analysis:

- Studies in this review used a wide variety of subject groups and traumatic events which hampered comparability between them. Subjects ranged from emergency services, law enforcement personnel and even civilian populations, and critical events included a shooting incident, natural disasters, sunken ships, and even Gulf war experiences. Thus, very diverse populations and traumatic events were included in this analysis.
- In two of the studies, the elapsed time between the traumatic incident and the intervention was only indicated as “unclear”. This could have interfered with the final meta-analytic results.

There was even evidence to demonstrate that debriefing could be effective even after months had elapsed following a critical incident. Chemtob *et al.* (1997) claimed that survivors of a natural disaster indicated lower scores on the IES scale after receiving debriefing six months after the original trauma. This study included 43 mental healthcare workers and hired help who attempted to reach out to the affected communities. Although this investigation displayed positive results, the following objections were raised against it:

- Only one psychometric instrument (IES) was utilised, thereby ignoring other important data on depression, anxiety, and substance abuse. Also, the outdated IES only included the Intrusion and Avoidance/Numbing dimensions of PTSD and excluded the

Hyperarousal dimension, whereas the revised version (IES- R) would have included all three dimensions (see Chapter 4 on this psychometric scale).

- Debriefing was offered only 6 to 9 months after the original incident. Intervening variables could have influenced the final results.
- Lastly, results obtained from this study cannot be generalised to other populations because mental health workers had prior knowledge of debriefing and its benefits. These professionals knew exactly how to make maximum use of such a crisis intervention tool (Kaplan *et al.*, 2001).

As previously discussed in the RCT section (paragraph 3.3.3) of this chapter, Campfield and Hills (2001) found, in sharp contrast to the previous study, that debriefing was more effective in reducing trauma symptoms in robbery victims when this intervention was immediately applied within ten hours of the incident and not delayed.

Studies that specifically assessed the effectiveness of debriefing in law enforcement personnel found positive results or even supported its use, for instance those conducted by Smith and de Chesnay (1994) on the South Carolina police department; Leonard and Alison (1999) on Australian police officers; Young (2003) on law enforcement personnel; and Wagner (2005) within the field of law enforcement and the emergency services (as cited in Malcolm *et al.*, 2005). The National Institute of Mental Health, (2002 as cited in Malcolm *et al.*, 2005) reviewed 17 studies regarding the effectiveness of debriefing with a wide range of populations which included medical patients, bank tellers, and law enforcement personnel. They found debriefing to be helpful in nearly 70 % of the police officers, military personnel, and emergency responders but when debriefing was applied to medical and surgical patients it yielded negative outcomes. This study indicated that this type of intervention was not effective when applied to non-emergency personnel.

Unfortunately, many of the methodological objections raised against the studies which regarded debriefing as ineffective could also be applied to the studies which yielded positive debriefing results (Kinchin, 2007).

According to Brewin (2001), these equivocal findings that affect trauma research are due to

immediate interventions being applied after traumatic events which “may interrupt the natural healing process of the body”. When a traumatic incident strikes, the victim usually reacts with fear, helplessness, and even horror. After the immediate threat is over and the victim starts to cognitively process the incident, secondary emotions such as shame and guilt may also appear. He argued that when a stressful event such as combat continues over an extended period the person’s body secretes endogenous opiates such as enkephalins and endorphins which create a sort of psychological numbing (Chong, Uhart, & Wand, 2007). Both cognitive and emotional responses usually accompany these long term traumatic experiences. Individuals may experience a sense of helplessness and simply give up and see what fate has in store for them. Once this event is over and the person starts to recover, he or she may find himself or herself in a hyper vigilant state which serves as a guard against similar threats in the future. The latter response is a human being’s primitive defence against highly stressful traumatic events.

### **3.5 CONSENSUS AMONGST RESEARCHERS ON THE EFFICACY OF CISD**

Despite ambiguous results being obtained from the above mentioned studies, researchers were nonetheless in agreement on the following matters. Firstly, there was no clear evidence to demonstrate that debriefing would prevent PTSD in clients that have been exposed to horrific traumatic incidents and, secondly, clients who had attended debriefings in the past have found this type of intervention to be helpful and positive (Miller, 2003).

In conclusion, we still know very little about the efficacy of psychological or pharmacological treatments (Conlon & Fahy, 2001).

Although clear cut answers regarding the efficacy of debriefing as a crisis intervention tool was not obtained from reviewing the literature, early post incident debriefing could still be helpful in assisting police members after a traumatic incident. This type of intervention could also assist law enforcement personnel in the following manner:

- Although memory gaps and false memory are normal reactions to traumatic incidents (Artwohl, 2002), victims of such incidents may be overwhelmed by them and this may

cause unnecessary anxiety. Debriefing can assist in educating the parties involved about these occurrences and what to expect in future.

- Group debriefing can also help to fill in the missing details regarding the critical incident, which in turn can greatly assist group members in gaining closure.
- Group debriefings can further enhance peer support which could be beneficial during stressful times.
- This type of intervention helps to foster the impression that the police as an organisation cares about their members' well-being.
- Although some police officials may develop PTSD or other types of psychological disorders or both, even after being debriefed, this type of intervention provides necessary information to victims regarding where and how to obtain help in future.
- Debriefing affords an opportunity for police officials to understand the impact of the event on their family members as well as how to offer them the necessary support (Miller, 2006 a, b).

Although debriefing as a trauma intervention tool has been thoroughly researched over many years, the SAPS multiple stressor intervention programme still lacks proper scientific evidence regarding its efficacy. Unlike the formal debriefing process which only caters for one trauma session and a follow-up session, this new intervention programme focused on addressing trauma and stressors over a longer period. The current study attempted to provide clear cut answers on the efficacy of this type of intervention by using more comparable groups from the same research setting. By using equivalent groups, this study bridged the methodological weaknesses which plagued other international studies researching the effectiveness of debriefing. The current research project compared two groups; one group that received psychological intervention (the multiple stressor intervention) and a deployment group which did not receive this type of intervention. The participants were assigned to these two groups by using convenience sampling without the subjects making a biased allocation themselves (Kelly, 2002). This allocation is discussed in greater detail in the chapter on methodology.

### **3.6 PROBLEM FORMULATION AND HYPOTHESES**

Before the formal research question is stated it is important to differentiate between the different variables. In the current study, the efficacy of multiple stressor intervention (independent variable) was evaluated according to the degree of PTSD symptoms (dependant variable) by using two psychometric scales. The Impact of Event Scale-Revised (IES-R) is the scale most widely used to assess the effects of trauma (Foa, Riggs, Dancu, & Rothbaum, 1993) and the Davidson Trauma Scale (DTS) assessed the different symptoms of PTSD reflected in the DSM-IV-TR classification system (Norris & Hamblen, 2004). These two scales are described in further detail in the following chapter.

The following research question guided the current research project:

Is the multiple stressor intervention programme effective, in other words, does it prevent or reduce symptoms of Post Traumatic Stress Disorder (PTSD)?

**The following “within group” hypotheses were tested in this study:**

Does the multiple stressor intervention programme reduce the development of symptoms in PTSD?

H<sub>10</sub> - There is no significant difference in the degree of PTSD symptoms between the pre- and post-test group scores.

H<sub>1a</sub> - There is a significant difference in the degree of PTSD symptoms between the pre- and post-test group scores.

This problem was then further divided into three separate problem statements concerning the effects of the multiple stressors on the three different dimensions of PTSD which include Intrusion, Avoidance/Numbing, and Hyperarousal (American Psychiatric Association, 2000).

In the first instance, it is essential to verify whether subjects re-experience traumatic events in terms of images, thoughts, or even a sense that they are reliving the experience.

H<sub>1.10</sub> - There is no difference in the degree of Intrusion symptoms between the pre- and

post-test group scores.

H1.1<sub>a</sub> - There is a difference in the degree of Intrusion symptoms between the pre- and post-test group scores.

In the second instance, the symptoms of Avoidance and Numbing offers a clear picture of whether members try to avoid feelings or thoughts, activities, or even people associated with the traumatic incident.

H1.2<sub>0</sub> - There is no difference in the degree of Avoidance and Numbing symptoms between the pre- and post-test group scores.

H1.2<sub>a</sub> - There is a difference in the degree of Avoidance and Numbing symptoms between the pre- and post-test group scores.

Lastly, it is important to measure the Hyperarousal symptom in order to gain an indication of whether police members have outbursts of anger, problems concentrating on the task at hand, and hypervigilance.

H1.3<sub>0</sub> - There is no difference in the degree of Hyperarousal symptoms between the pre- and post-test group scores.

H1.3<sub>a</sub> - There is a difference in the degree of Hyperarousal symptoms between the pre- and post-test group scores.

**The following “between group” hypotheses were tested in this study:**

H2<sub>0</sub> - There is no significant difference in the degree of PTSD symptoms between the intervention and control group pre- and post-test scores.

H2<sub>a</sub> - There is a significant difference in the degree of PTSD symptoms between the intervention and control group pre- and post-test scores.

H2.1<sub>0</sub> - There is no difference in the degree of Intrusion symptoms between the intervention and control group pre- and post-test scores.

H2.1<sub>a</sub> - There is a difference in the degree of Intrusion symptoms between the intervention

and control group pre- and post-test scores.

H2.2<sub>0</sub> - There is no difference in the degree of Avoidance and Numbing symptoms between the intervention and control group pre- and post-test scores.

H2.2<sub>a</sub> - There is a difference in the degree of Avoidance and Numbing symptoms between the intervention and control group pre- and post-test scores.

H2.3<sub>0</sub> - There is no difference in the degree of Hyperarousal symptoms between the intervention and control group pre- and post-test scores.

H2.3<sub>a</sub> - There is a difference in the degree of Hyperarousal symptoms between the intervention and control group pre- and post-test scores.

Questions from both H1 and H2 address whether the multiple stressor intervention programme does in fact reduce the symptoms of PTSD in NIU police officers exposed to multiple traumas in their daily working environment.

### **3.7 SUMMARY**

This chapter commenced with the three types of evidence considered to be necessary to judge the effectiveness of psychological interventions. The first type consisted of anecdotal and satisfaction surveys, the second comprised cross sectional design studies, and the third type included Randomised Controlled Trials (RCT), which is still regarded as the gold standard when it comes to judging the efficacy of interventions. This chapter also discussed evidence for and against the efficacy of Critical Incident Stress Debriefings (CISD) and researchers in this field “agreed to disagree” about the efficacy of debriefings to prevent PTSD. This chapter concluded with the research question and hypotheses that guided the research on the efficacy of multiple stressor intervention on PTSD symptoms.

## **CHAPTER 4**

### **METHODOLOGY**

#### **4.1 INTRODUCTION**

This chapter describes the methodology utilised in this study by focusing on the research design, population, measuring instruments, procedure, and the statistical methods. Ethical considerations are also addressed in this chapter. Although the current study compared two groups, which creates the impression of an experimental approach, it opted for a rather more “naturalistic” approach. This was achieved by observing participants in their own natural environments. It was important that the research subjects did not regard the multiple stressor research as an experiment which could have resulted in participants not taking the intervention seriously and in turn could have jeopardised the research results.

#### **4.2 RESEARCH DESIGN**

In order to address the research question and accompanying hypotheses (Chapter 3) the researcher used the following approach.

Convenience sampling was utilised to assign participants to either a deployment or an intervention group. Only a small sample group was used in the study because the multiple stressor intervention programme is a long term intervention strategy and NIU members are deployed on a regular basis. Therefore, it was difficult to obtain a larger sample for the current study. Data were collected by using questionnaires and two trauma scales. A General Demographic questionnaire was used to capture participants’ biographical information and a Current Traumatic Stress and General Stress questionnaire was developed to record traumatic and stressful events during the research period. Two trauma scales, namely the Impact of Events Scale-Revised and the Davidson Trauma Scale, were employed to track and trace PTSD symptoms for both the deployment and intervention groups. Results obtained from these two scales were analysed using two non-parametric techniques, namely, the Wilcoxon signed rank test and the Mann-Whitney  $u$  test. The first method enabled the researcher to consider test retest differences (within groups) and the second method

enabled the researcher to show whether there is a difference between the intervention and deployment groups.

In the current study, the researcher chose the field experiment due to the following reasons:

- The quasi-experimental design takes place in the natural setting of the workplace which counters the artificiality effect of a true laboratory environment. Research on the multiple stressor intervention programme was conducted at the NIU base at Bon Accord during office hours, which was a familiar setting for the participants.
- A deployment group which had a certain degree of similarity to the group that received the multiple stressor intervention was added. In the current study the deployment group originated from the same unit as the intervention group, thereby rendering these two groups comparable. Both groups worked under the same conditions and they shared similar traumatic experiences. Unfortunately, it was not practically possible to obtain a truly equivalent control group, thus the researcher was compelled to use convenient sampling (see section 4.3 in this chapter). The inclusion of a relevant “comparative group” was a methodological improvement on previous research dealing with debriefing efficacy (see Chapter 3) which compared groups that originated from different settings (e.g., civilian populations versus law enforcement personnel).

The research design can be illustrated thus:

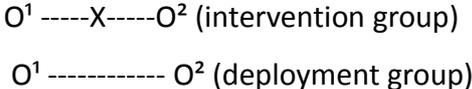


Figure 4.1. Pre-Test Post-Test Design.

In Figure 4.1, the X represents an exposure to an experimental variable and O represents a measurement recorded on an instrument (Adapted from Creswell, 2003). In the current study, the intervention group received eight lessons from the multiple stressor intervention programme over a three month period. This intervention represents the X on Figure 4.1.

Also, in this figure  $O^1$  refers to the pre-test measurement on the two psychometric scales, namely the Davidson Trauma Scale (DTS) and the Impact of Event Scale-Revised (IES-R) for both the intervention and deployment groups, while  $O^2$  represents the post-test measurement on the same two scales. These two psychometric instruments measured PTSD globally, as well as the three dimensions of PTSD as stated in the DSM-IV-TR diagnostic classification. The DTS and IES-R were firstly utilised as a pre-test to determine the participants' initial PTSD symptoms and then, after the intervention and deployment period, as a post-test to track and trace their current levels of PTSD symptoms (pre-test post-test design). These two sets of scores for both groups enabled the researcher to determine whether any improvements in PTSD symptoms had been made due to the intervention or by spontaneous self-recovery. These results were subsequently used to determine the efficacy of multiple stressor interventions (independent variable) on the degree of PTSD symptoms (dependent variable) amongst the research participants.

#### **4.3 SAMPLE GROUP**

The sample group consisted of 22 participants stationed at the NIU base in Pretoria. These 22 participants were specifically selected for the study due to their repeated exposure to shooting incidences (e.g., shooting an armed protester or being shot by a perpetrator), gruesome scenes (e.g., attending the murder scene of colleagues after violent service delivery protests), and extreme crowd violence where the officers' lives were threatened. In the current study, two self-report scales were employed to identify participants with PTSD (see paragraph 4.4.3). Solomon, Mikulincer and Hobfoll (1987) indicated that PTSD self-report scales closely correspond with the PTSD diagnoses of clinicians. Therefore, the current study relied on a psychometric diagnosis of PTSD, and a score of 20 or more on the Davidson Trauma Scale was used as an indicator of PTSD among research participants. Both male and female officers participated in this study. Initially, the multiple stressor intervention programme was offered to every policeman and policewoman stationed at the NIU in Pretoria because it is unethical to deliberately withhold an intervention from research subjects who could benefit from such an intervention. Unfortunately, not all the NIU members could undergo the intervention sessions due to work-related obligations (e.g., deployment). Consequently, the deployed members formed the non-intervention group and

the non-deployed members constituted the intervention group. Thus, deployment was the deciding factor in the allocation of participants to either a non-intervention or an intervention group in the current study, resulting in no control over this variable. (Deployment will be discussed in paragraph 4.5 of this chapter). Table 4.1 presents an overview of the characteristics of the two groups.

Table 4.1

*Characteristics of the Participants*

	Intervention group (n=13)				Deployment group (n=09)			
	21-25	26-30	31-39	40-49	21-25	26-30	31-39	40-49
<b>Age</b>	0	1	8	4	0	2	4	3
<b>Gender</b>	<b>Male</b>		<b>Female</b>		<b>Male</b>		<b>Female</b>	
	9		4		8		1	
<b>Home language</b>	<b>Sepedi</b>	<b>Zulu</b>	<b>Venda</b>	<b>N Sotho</b>	<b>Sepedi</b>	<b>Zulu</b>	<b>Venda</b>	<b>N Sotho</b>
	2	1	1	1	2	1	0	1
	<b>Setswana</b>	<b>Tsonga</b>	<b>Tswana</b>	<b>Siswati</b>	<b>Xhosa</b>	<b>Tsonga</b>	<b>Tswana</b>	<b>Ndebele</b>
	3	2	2	1	1	1	2	1
<b>Rank</b>	<b>Const.</b>	<b>Sgt.</b>	<b>W/O.</b>		<b>Const.</b>	<b>Sgt.</b>	<b>W/O.</b>	
	5	4	4		4	2	3	

The mean age of the intervention group was 37.69 years while that of the deployment group amounted to 36.33 years. Members of the NIUs were deployed to different parts of the country in order to render specialised high risk operations that were not part of ordinary police work. Also, more male than female participants were included in the study due to the structuring of the NIU which is predominantly male-orientated. Unfortunately, only African participants were available for inclusion and they belonged to different cultural and language groups. All the research participants were non-commissioned officers and this could possibly be attributed to the fact that commissioned officers usually prefer the camaraderie of fellow officers instead of mingling with subordinates.

Four NIU branches are located throughout the Republic of South Africa, one each in Gauteng, Kwazulu-Natal, the Eastern Cape and the Western Cape provinces. The current study focused only on the Gauteng (Pretoria) branch and the results can therefore not be generalised to the other three branches. However, according to the SAPS National Head of the Intervention units, Brigadier M.E. Tsiloane (personal communication, January 31, 2012), these four provincial offices of the specialised unit share the same job descriptions. This results in similar operational duties for all their members. Furthermore, these branch members work

side by side, especially during large operations and are therefore not province bound like ordinary station members.

#### **4.4 MEASURING INSTRUMENTS**

Questionnaires and scales were utilised owing to their “enmeshment” with the quantitative research (De Vos, Strydom, Fouche & Delpont, 2002). The following questionnaires and scales were used in this study:

##### **4.4.1 General demographic questionnaire**

This questionnaire contained general biographical information, including the names and surname, age, gender, and home language of each participant. Data on this questionnaire assisted the researcher in establishing whether the two groups were more or less homogenous and in grouping the data during the data capturing phase (See Appendix A).

##### **4.4.2 Current traumatic stress and general stress questionnaire**

As previously stated in the research design section, researchers do not have total control over the different variables in a quasi-experimental approach. In order to increase control over the variables in this study, the author developed a short trauma and stress questionnaire to address both traumatic stress and general stress amongst the participants. SAPS members are usually debriefed after traumatic events. Therefore, if any debriefing was performed by the SAPS Employee Health and Wellness (Psychologists, Social workers or Chaplains), which could influence the research results, this would be recorded on the questionnaire. Hence, the questionnaire enabled the researcher to track traumatic and stressful events that influenced the participants during the research period.

In order to ensure some sort of reliability and validity, the development of this questionnaire was based on the SAPS literature on trauma as well as research on stress within the organisation. A review of the aforesaid contributed to the content validity of the questionnaire. Moreover, three psychologists within the SAPS were requested to review the

items using judgemental analysis in order to remove biased items. These experts were further requested to judge the cultural and gender appropriateness of the items. A definition of traumatic events from a SAPS perspective have been outlined in the first chapter. These events were originally identified as being traumatic by functional police members and psychologists within the SAPS during several workshops in the 1990s. The purpose of these workshops was to gain consensus among professionals and the members of the SAPS with regards to what constitutes traumatic events within the law enforcement sector. The section of the questionnaire covering “general stress” was based on information obtained from the SAPS members who had experienced suicidal ideation in the past. This information was recorded by the Psychological Services unit of the SAPS in a follow-up questionnaire stipulating which factors lead to high levels of stress amongst affected members throughout South Africa. It is important to note that this questionnaire is only valid and reliable within the SAPS context and cannot be used in any other context or research.

The traumatic section of the questionnaire included nine items and the stress section included six items (Appendix B).

This questionnaire was completed every two weeks by both the quasi-experimental and control groups. Research participants were expected to indicate whether they had experienced any of those negative stressors during the past two weeks by marking the appropriate choice with a cross (x). In the “other” category, participants could elaborate if they chose to do so. The purpose of this information was to gain a more holistic understanding of the NIU member’s current traumatic experiences and what daily stresses influenced their lives.

### 4.4.3. Psychometric Scales

The following two scales were employed:

#### 4.4.3.1. Impact of Event Scale-Revised (IES-R)

The original IES, which measured the only Intrusion and Avoidance dimensions of PTSD, was developed by Horowitz, Wilner, and Alvarez (1979). This original questionnaire consisted of 15 items; with 7 items relating to the Intrusion dimension and 8 items to the Avoidance subscale. Despite the usefulness of this original IES, the Hyperarousal dimension was absent in the assessment of human responses to traumatic events. The revised version of the IES, derived from the original IES, was presented by Weis and Marmer (1997). The goal of this revision was to increase the usefulness of the scales and to align this instrument with the DSM criteria for PTSD (Beck *et al.*, 2008). This instrument uses a Likert scale ranging from 0 to 4 (see Appendix C for an explanation of the different options). Moreover, the updated version consists of a total of 22 items which can be subdivided into the three PTSD dimensions as follows (Weis, 2004):

- The first dimension regarding Intrusion consists of 8 items. Items 1, 2, 3, 6, 9, 14, 16, and 20 represent the Intrusion subscale.
- The second dimension refers to Avoidance which also consists of 8 items. Items 5, 7, 8, 11, 12, 13, 17, and 22 represent the Avoidance subscale.
- The last dimension, which refers to Hyperarousal, consists of 6 items. Items 4, 10, 15, 18, 19, and 21 represent the newly added Hyperarousal subscale.

To interpret the scores obtained by the participants, Malt *et al.* (1993) suggested the following subscale scores:

- 0-8 usually indicates minor reactions
- 9-19 represents moderate reactions
- 20-more are of clinical importance.

It is possible to attain a scoring range of 0 to 88 on this psychometric measure by adding the three PTSD dimension scores.

The IES-R is the most widely used scale for assessing the effects of trauma (Foa *et al.*, 1993). This instrument is versatile and can be administered to adult as well as child trauma victims (Joseph, 2000). It has the ability to display changes over time and to investigate the increasing or decreasing symptoms of PTSD. It can also act as a survey of current symptoms in the Intrusion, Avoidance, and Hyperarousal domains (Weis, 2004). Weiss (2003) revealed that the IES-R has been employed to measure PTSD symptoms for a range of traumatic stressors in many cultures. Accordingly, the scale has been translated into Chinese, Japanese, French, and Spanish (Wu & Chan, 2003; Asukai *et al.*, 2002; Brunet, St-Hilaire, Jehel, & King, 2003; Baguena *et al.*, 2001 as cited in Beck *et al.*, 2008). The IES-R was utilised in the present study because population groups from varying backgrounds are employed by the SAPS.

Investigations regarding the psychometric properties of the original IES yielded significant results. Concerning the reliability of this scale, Horowitz and his co-workers (1979) found that the IES consisted of homogeneous clusters of items that tapped Intrusion and Avoidance (Cronbach's alpha for Intrusion was .79 and for Avoidance .82). The moderate correlation of  $r=.42$  (18 % of the variance) between these two subscales allowed for independence between these subscales. Concerning test-retest reliability, Horowitz *et al.* (1979) found Cronbach alpha coefficients of .87 for Intrusion and .79 for Avoidance. In a more recent updated report, Sundin and Horowitz (2002) focused on published research which utilised the original IES. These researchers used 18 studies and proposed non-weighted averages for coefficient alpha, resulting in a coefficient of .86 for Intrusion and .82 for Avoidance using Cronbach's alpha.

In order to assess the psychometric properties of the updated IES-R, Liberman *et al.* (2002) studied the impact of traumatic events on police officers. The research sample consisted of 700 police officials and 300 subjects which served as a comparative sample. These subjects were nominated by the officers themselves and shared similar age and gender characteristics. Results revealed the following internal consistency coefficients for the three subscales: Intrusion  $\alpha=.89$ , Avoidance  $\alpha=.84$  and Hyperarousal  $\alpha=.82$ . These values displayed

high uniformity and the correlation for the average item total subscales were: Intrusion  $r=.52$ , Avoidance  $r=.40$ , and Hyperarousal  $r=.45$ .

Regarding criterion validity, Weis and Marmer (1997) claim that the original IES Intrusion and Avoidance subscales have the ability to observe changes in a patient's clinical status over a period and also to track and trace his or her different responses to traumatic events that differ in severity. In terms of convergent validity, Sundin and Horowitz (2002) consulted 18 studies to assess this form of validity. These studies were primarily clustered according to the variable they assessed, such as depression, anxiety, and general symptoms. Also, the researchers focused on the correlation between the IES subscales (Intrusion and Avoidance) and other instruments that diagnosed PTSD (e.g., PTSD inventory, MMPI, and Mississippi Scale for Combat-Related PTSD). These correlations revealed moderate relationships which indicated that the IES contributed information that is not being captured by any of the other PTSD instruments.

#### *4.4.3.2. Davidson Trauma Scale (DTS)*

This scale was developed by Jonathan Davidson and his co-workers (Norris & Hamblen, 2004) as a self-rating instrument for PTSD. The scale assesses the 17 symptoms of PTSD that reflect the DSM-IV-TR classification system. Each item is rated for severity and frequency on a 5-point Likert scale; the format of which can be viewed in Appendix D. This 17 item scale can be subdivided into the three PTSD dimensions thus:

- The first dimension regarding Intrusion consists of 5 items. Items 1, 2, 3, 4, and 5 represent the Intrusion subscale.
- The second dimension refers to Avoidance, which consists of 7 items. Items 6, 7, 8, 9, 10, 11, and 12 represent the Avoidance subscale.
- The last dimension regarding Hyperarousal consists of 5 items. Items 13, 14, 15, 16, and 17 represent the Hyperarousal subscale.

A client with a high DTS score is likely to suffer from more pervasive or severe PTSD symptoms compared to a client with a low score. A scoring range of 0 to 136 is possible on

this instrument. A grand total of 20 or more may be used to indicate that PTSD is a likely probability. This diagnostic probability means that the client has a 67 % chance of suffering from this disorder. The DTS table, “Ratio of expected number of individuals with PTSD to individuals without PTSD”, can be utilised to calculate this probability (see Appendix E). By using the tables’ relative frequencies, an individual with a DTS total score of 25 signifies that 20.48 % of people without PTSD will obtain this score while 80.59 % of people with PTSD will attain a similar score. Column A in this table also exhibits an individual’s likelihood of suffering from a PTSD relative to the population. A DTS total score of 25 indicates that 3.94 people with PTSD will be found for every 1 individual who does not have PTSD (Davidson, 2002).

In order to demonstrate the psychometric properties of the DTS, Davidson and his colleagues assessed 343 subjects involved in a wide variety of traumas such as war veterans (110 male participants), rape victims (78 females), survivors of natural disaster (hurricane Andrew, 53 victims), and participants in a clinical trial (102 subjects consisting of 84 males and 18 females). This clinical trial entailed a placebo-controlled evaluation of an antidepressant drug, and in this instance, the DTS was used to distinguish between patients who responded to treatment and those who failed to do so. The DTS was tested for split-half reliability, test-retest correlation, and for internal consistency (Davidson, 2002). Results showed a very high Cronbach’s alpha coefficient for internal consistency, ranging from .97 to .99 for the frequency, severity dimensions, and for the total scale. Split-half reliability for frequency indicated a Pearson correlation coefficient of  $r=.95$  and  $r=.97$  for the severity scale. In the clinical sample the scale showed a test-retest correlation of .86 over a two week period.

An important feature of the DTS is its ability to track changes after clinical treatments have been provided and possible improvements have been made. Participants who completed the DTS obtained a pre-score total of 74 which indicated a very high probability of having PTSD (Davidson, 2002). This original score was derived by adding the three PTSD dimension scores (Intrusion, Avoidance/Numbing and Hyperarousal) to obtain the DTS total score. After receiving treatment these participants showed remarkable improvement by obtaining a post score total of 40. In contrast, those participants who did not improve after treatment received pre- and post-test scores of 87 and 86 respectively (Norris & Hamblen, 2004).

#### 4.5 PROCEDURE

Access to the research setting was negotiated with the SAPS Head of Psychological services, Brigadier B.P. Kwindu. Permission was granted on condition that the research be conducted according to the research proposal that was approved by the academic institution. Furthermore, the senior officer kindly requested a copy of the researcher's thesis after completion. Following these negotiations, the researcher set up a meeting with Colonel I. Woodman, commander of the NIU Pretoria branch. The purpose of this meeting was to explain the nature of the research and to arrange physical access to the sample. After liaising with the gate keeper, an information session was scheduled for all the Pretoria members of the NIU for the ensuing week. During this information session the purpose of the study was explained and volunteers were recruited for the research project. A total of 29 NIU members attended this information session and 26 members availed themselves for the study.

During the first contact session, participants completed the General Demographic questionnaire and the Current Traumatic Stress and General Stress questionnaire. After completing these two questionnaires, participants also completed the DTS and the IES-R. These two scales were employed as a pre-test to determine the initial PTSD symptoms of the participants. The administration of these questionnaires and scales were undertaken early in February 2012. The pre-testing phase was followed by the first lesson plan entitled "cognitive restructuring", which was selected by the researcher. The selection of the first topic was based on social-cognitive theories (Chapter 2) which stated that cognition plays an important role in the meaning a person attributes to a traumatic incident. Thus, psychological theory was the determining factor in the first topic. In the current study, a total of eight topics were presented to the intervention group over a three month period. These topics consisted of:

Topic 6 - Cognitive restructuring

Topic 3 - Anger management

Topic 20 - Stress management

Topic 21 - Stress reactions

Topic 19 - Emotional effects of stress

Topic 4 - Bereavement

Topic 7 - Conflict management

Topic 12 - Having fun

The above mentioned topics were selected by the researcher and were presented once a week until the end of May 2012. The remaining 7 subjects were specifically selected due to the following reasons:

During the negotiating meeting with Colonel Woodman, the officer informed the researcher about existing rivalries between level I and level II members. NIU management draw a clear distinction between members who had completed their advanced course in weaponry and urban tactics (level I) and those who had not (level II). Members who had completed this course were viewed as being more competent by their commanders. This led to high levels of stress and conflict amongst members as well as anger towards management in the form of insubordination. The commanding officer also explained that certain members had lost colleagues in the line of duty recently and that some of them had not adequately dealt with those losses and refused to talk about them. Given these particular dynamics operating at the NIU in Pretoria, the researcher handpicked relevant topics to serve as a “treatment programme” in addressing these themes.

The participants of the intervention group promptly completed the Current Traumatic Stress and General Stress questionnaire every two weeks until the end of the intervention period. The participants of the non-intervention group, on the other hand, were deployed for most of the research period and initially completed the questionnaire before deployment and also on a second occasion upon their return to the base in Pretoria. Members of the NIU in Pretoria were deployed to the Kruger National Park to combat rhino poaching for a period of two months after which they returned to the base. After a few rest days at home these members were once more deployed, this time to different parts of SA to combat public violence in the form of service delivery protests and also to lay operations at planned cash in transit heists (see Chapter 1). The deployment period to the different provinces depended firstly on how quickly law and order could be restored to communities and, secondly, how swiftly perpetrators could be brought to justice. In order to facilitate the recollection of

traumatic events, deployed members were encouraged to record these events in their diaries. The DTS and IES-R were employed on a second occasion as a post-test to track and trace participants' current level of PTSD symptoms after the eight lesson plans had been presented and also after deployment.

All the measuring instruments were offered only in English and subjects were required to possess a minimum grade 8 reading level in order to complete the DTS (Davidson, 2002). As stated previously, the IES-R can be used in both adult and younger populations with basic reading levels (Joseph, 2000). In the current study, all the participants had acquired a grade 12 education level with English as a second language. No time limit was imposed on the research subjects, but most NIU members completed the two scales in 15 to 20 minutes on each occasion. Only 3 to 4 minutes were necessary to complete the Current Traumatic Stress and General Stress questionnaire every two weeks. The researcher conducted the pre- and post-test sessions and to ensure a standardised presentation format, the researcher also personally presented the multiple stressor intervention session to the participants.

#### **4.6 TECHNIQUES OF ANALYSIS**

In the current study, the researcher utilised two non-parametric methods, namely, the Wilcoxon signed rank test and the Mann-Whitney  $u$  test. The first statistical technique corresponds closely with the parametric paired  $t$ -test and was specifically chosen to compare for test-retest differences on repeated measures (pre-post measures) due to its small sample size (McLaughlin, 2002). The second technique is an alternative to the  $t$ -test and was applied to independent groups (e.g., experimental and control group differences) as suggested by Pallant (2010). In this study, each research subject contributed two sets of scores (pre- and post-scores) on two different measures (DTS and IES-R). In both tests, these two sets of data were subsequently ranked from the lowest to the highest based on the assumption that if there are no differences between the sets, similar numbers of high and low ranks could be expected (Field, 2005). Consequently, the null hypothesis would be accepted, but when differences were found between the two sets of scores the alternate hypothesis was accepted as being just. The different problem statements concerning PTSD, referred to in the previous chapter, were statistically tested using the IBM SPSS version 20, software package

(SPSS, 2011).

#### **4.7 ETHICAL CONSIDERATIONS**

Two ethical considerations were deemed to be important in the current study. Firstly, it was critical to protect the subject's identity and to ensure confidentiality. In order to do so the researcher assigned digits to every participant (e.g., 01, 02, etc.). These digits were allocated at the first session and were utilised throughout the research period. When subjects completed the DTS, IES-R and Current Traumatic and General Stress questionnaire, they only used the assigned digits and not any identifying features such as surnames or ranks. Only the researcher had access to the biographical information of participants which could link the digits to the concerned party. Thus, the necessary steps were taken to disguise the true identity of the research participants.

Secondly, as mentioned previously, it is unethical to deliberately withhold an intervention from research subjects who could benefit from such an intervention (Deahl, 2000). All members of the NIU Pretoria had equal opportunity to undergo the multiple stressor intervention programme, but due to their work circumstances they could not all participate in the study. After the research had been completed the deployment group were also offered the multiple stressor intervention sessions in order to address their trauma so that they could benefit from this newly developed intervention method. As stated previously, deployment in this case was the deciding factor in the allocation of participants to either an intervention or a non-intervention group which resulted in there being no control over this variable.

#### **4.8 SUMMARY**

This chapter introduced the research design that was utilised for the current study. The quasi-experimental design was discussed in conjunction with a pre-test post-test design for both an intervention and a non-intervention group. A sample group of 22 subjects participated with 13 and 9 subjects allocated to the experimental group and the control group respectively. Only African participants were included in this study and they belonged to different African cultures and language groups. Mostly male participants were included

due to the risks and dangers involved at this particular SAPS high risk unit. Different measuring instruments were applied to obtain data from the participants. The Demographic questionnaire was utilised to obtain general biographical information and the Current Traumatic Stress and General Stress questionnaire was developed to track traumatic and stressful events that influenced the participants during the research period. Moreover, two trauma scales were employed to measure PTSD globally and dimensionally. The Davidson Trauma Scale (DTS), a clinical scale for PTSD, and the Revised Impact of Event Scale (IES-R) are widely used to assess the effects of trauma (Foa *et al.*, 1993). The procedure section earlier in this chapter addressed the negotiations with different SAPS role players to gain access to the research setting. Also included in this section were the different lesson plans that were presented to the intervention group over a three month period. Two non- parametric statistical techniques were applied to analyse the data obtained from the two trauma scales. The Wilcoxon signed rank test supplied *within* group results whereas the Mann-Whitney *u* test supplied *between* group results. This chapter concluded with the ethical considerations, especially those withholding interventions from research participants which could greatly benefit.

## CHAPTER 5

### DISCUSSION OF RESULTS

#### 5.1 INTRODUCTION

In this chapter, the results are presented in the following manner: The first part addresses the descriptive statistics which is closely linked to Chapter 4 (specifically Table 4.2). Part two discusses the results of the study in relation to the hypotheses formulated in Chapter 3, and lastly, part three presents the qualitative results as specified in Chapter 4.

#### 5.2 DESCRIPTIVE STATISTICS

These statistics further describe the characteristics of the sample group as presented in the previous chapter.

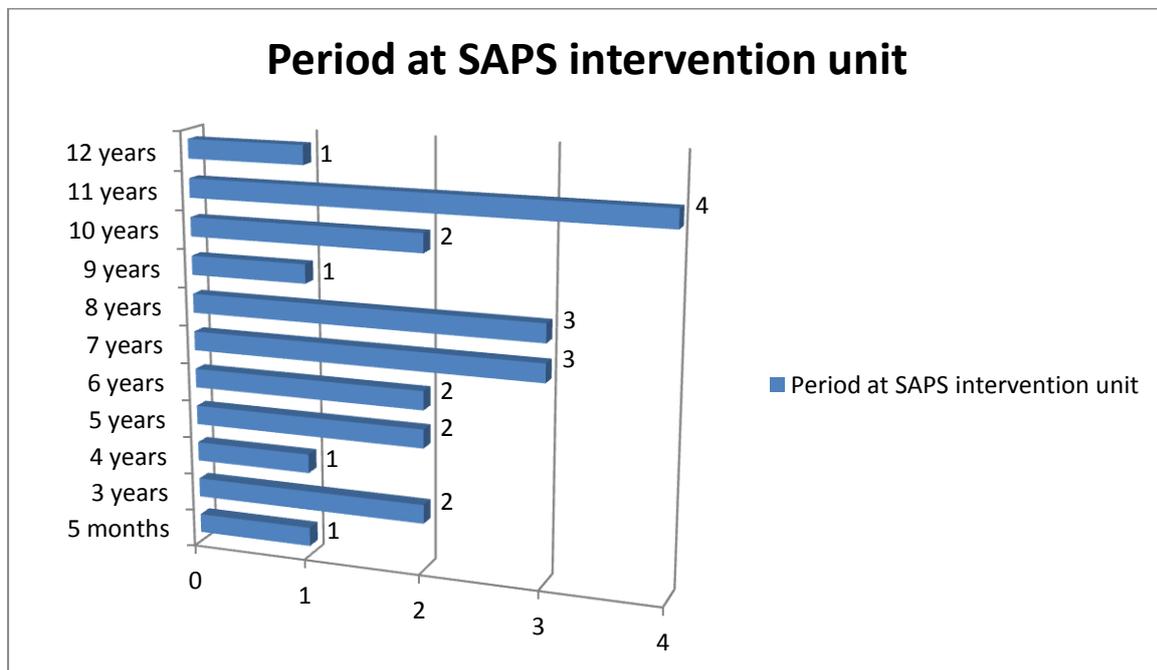


Figure 5.1 Period at SAPS National Intervention Unit.

Figure 5.1 shows that most members have been in the NIU for a period of 11 years (18.2 %). Statistics from Figure 5.1 also indicate that a total of 31.8 % NIU members have completed 10, 11, or 12 years of service at this unit. The NIU was established in 2000 and most of the

research subjects have been with this unit almost from its inception. As stated in Chapter 1, the NIUs are high risk units whose work differs significantly from that of ordinary police work. The longer a member is stationed at one of these units, the greater his or her risk becomes for trauma, but more importantly, for multiple traumatic experiences. As mentioned previously, multiple traumas could lead to more complicated and even more severe traumatic responses than single incidents (Green, 1993). Members stationed at this high risk unit usually experience shooting incidents in their line of duty and many of them have had to kill cash in transit robbers, ATM bombers, and armed drug dealers. On the other hand, some of these members have been wounded by these same perpetrators or have seen their colleagues fatally wounded in front of them. Also, many of these members have had to face extreme crowd violence and intimidation during service delivery protests which resulted in physical attacks on some of them. Lastly, many of these members have attended gruesome scenes where the occupants of motor vehicles were killed by hijacking syndicates.

The descriptive statistics also indicated that the sample (13.6 %) constituted mostly middle aged members (35, 38 and 43 years old) and only non-commissioned officers participated in this study (40.9 % Constables, 27.3 % Sergeants and 31.8 % Warrant Officers). Figure 5.2 below furnishes an overview of the study’s representivity regarding gender.

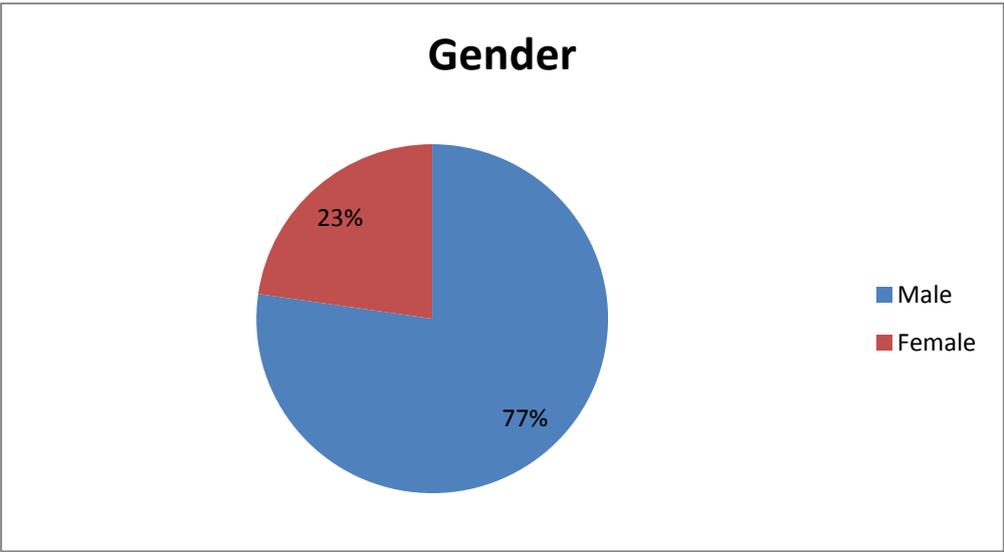


Figure 5.2 Gender distribution.

Figure 5.2 indicates that mostly males (77.3 %) participated in this study. This can be

attributed to the fact that training at the NIUs is very physical in nature and the daily working circumstances can be extremely dangerous resulting in only a small portion of females applying for positions at this elite unit. Next, Table 5.6 presents a breakdown of the different types of traumatic incidents encountered by research participants.

Table 5.1  
*Traumatic Events Encountered by Research Subjects*

Intervention group (n=13)		Deployment group (n=9)	
Gruesome scene	Family murder (1)	Gruesome scene	Vehicle accident (2)
Gruesome scene	Motor accident(1)	Gruesome scene	Vicarious traumatisatation (2)
Gruesome scene	Vicarious traumatisatation (1)	Hostage situation	Fear for life (1)
Physical attack on member	Fear for life (1)	Car accident	Physically hurt (1)
Physical attack on member	Shooting (1)	Shooting incident	General (3)
Shooting incident	Colleague (1)		
Shooting incident	Wounded (2)		
Shooting incident	General (5)		

Note. ( ) with the accompanying values indicates the number of subjects involved in that specific traumatic incident.

Members of the NIU in Pretoria have experienced multiple traumas in the past. In the current study, participants were requested to recall a traumatic incident which psychologically affected them the most during the past two years. In response, both sample groups indicated that they were mostly exposed to shooting incidents due to the fact that the NIU is a high risk unit within the SAPS. Shooting incidents usually occur between NIU members and service delivery protesters, cash in transit robbers or illegal miners. One of the intervention group members was wounded in the back by robbers and still suffers from nerve pain. Furthermore, one member attended a gruesome scene involving a family murder where the husband had killed his spouse and two children. Other gruesome scenes include vehicle accidents involving dead mutilated bodies, and also graphic media, and police footage of a helicopter crash showing the charred remains of colleagues. Lastly, one of the members of the deployment group was taken hostage by armed perpetrators and kept hostage for a period of 3 hours. Hostage negotiators successfully bargained with the hostage keepers to finally ensure the member’s safe release.

**5.2.1 Skewness and Kurtosis**

Descriptive statistics supply information on the distribution of scores on continuous variables

(Pallant, 2010). Even though non-parametric statistical techniques were applied in the current study, the author considered it appropriate to present the skewness and kurtosis values to highlight the fact that the sample groups were not normally distributed.

Table 5.2

*Skewness and Kurtosis on the DTS*

DTS	N	Mean	Std. Deviation	Skewness	Kurtosis
PrIntrusion	22	16.27	10.859	.316	-1.063
PrAvoidance and Numbing	22	17.95	16.049	.922	-.066
PrHyperarousal	22	14.73	11.175	.859	.048
PrDTS Total Score	22	48.95	34.760	.669	-.224
PoIntrusion	22	11.00	7.387	.394	-1.284
PoAvoidance and Numbing	22	10.68	11.277	2.730	9.389
PoHyperarousal	22	8.05	8.726	2.120	5.813
PoDTS Total Score	22	29.73	24.413	2.033	5.577

Table 5.2 indicates that the post Avoidance/Numbing (2.730) and Hyperarousal (2.120) skewness values are very far distributed from the 0 value which indicates an unequal distribution. Most of the Kurtosis scores indicated negative values which implies that the distribution is relatively flat with a number of extreme cases (Pallant, 2010). The pre Hyperarousal score of .048 is the closest value to 0, when compared with the proximity of the other two dimensions (Intrusion and Avoidance/Numbing) to 0. In the case of the post Avoidance/Numbing and Hyperarousal scores, the standard deviation was larger than the mean. It was possible to obtain a higher standard deviation than the mean in these two cases due to the extreme values that were present in the data set.

Table 5.3

*Skewness and Kurtosis on the IES-R*

IES-R	N	Mean	Std. Deviation	Skewness	Kurtosis
PrIntrusion	22	14.59	9.00	0.178	-0.746
PrAvoidance and Numbing	22	15.45	8.416	0.085	-0.977
PrHyper arousal	22	9.45	6.745	0.460	-0.771
PrDTS Total Score	22	39.55	21.869	0.024	-0.579
PoIntrusion	22	9.32	7.305	1.352	2.383
PoAvoidance and Numbing	22	11.95	7.637	0.783	0.536
PoHyper arousal	22	5.23	5.855	1.895	4.139
PoDTS Total Score	22	26.5	19.407	1.571	2.935

Table 5.3 shows that the post Intrusion (1.352) and Hyperarousal (1.895) skewness values are very far distributed from the 0 values which also indicate an unequal distribution. Initially the

Kurtosis scores exhibited values below 0 which once more indicates too many cases in the extremes, but these scores later displayed positive values in the post score dimensions which indicate a distribution that is clustered in the middle (Pallant, 2010).

### **5.3 HYPOTHESES**

In this section, the statistical results are presented according to the hypotheses stated in Chapter 3. These hypotheses were tested, firstly, by using the Wilcoxon signed rank test procedure to check for test-retest differences within the deployment and intervention groups and, secondly, the Mann-Whitney  $u$  test was utilised to check for differences between these two groups.

#### **5.3.1 Within group testing**

The data relating to the first hypotheses were all analysed using the Wilcoxon signed rank test. This non-parametric technique was selected, firstly, due to the small sample size and, secondly, the data obtained from the current study did not meet the strict assumptions of parametric statistics, for instance those of the  $t$ -test (Pallant, 2010).

##### Hypothesis 1

H1<sub>a</sub> - There is a significant difference in the degree of PTSD symptoms between the pre- and post-test group scores.

Tables 5.4 and 5.5 below display the frequencies for the intervention group concerning their PTSD scores using both psychometric scales (DTS & IES-R), as well as the three different dimensions comprising PTSD as stated in the DSM-IV-TR (American Psychiatric Association, 2000). This PTSD total is obtained by adding the sum of the three PTSD symptoms.

Table 5.4

*Davidson Trauma scale (DTS) Intervention Group*

Intervention group	Pre Mean	Pre Sum	Post Mean	Post Sum	Mean Difference
PTSD total	58.00	754	32.92	428	25.08
Intrusion	17.85	232	11.08	144	6.77
Avoidance and numbing	22.69	295	11.69	152	11.00
Hyperarousal	17.46	227	10.15	132	7.31

As indicated in Table 5.4, significant differences were found between the PTSD pre- and post-mean scores of the intervention group using the DTS as an instrument. The mean score decreased significantly from pre-programme (mean=58.00) to post-programme (mean=32.92), resulting in a mean difference of 25.08 between the two scores.

Table 5.5

*Impact of Event Scale-Revised (IES-R) Intervention Group*

Intervention group	Pre Mean	Pre Sum	Post Mean	Post Sum	Mean Difference
PTSD total	44.23	575	27.15	353	17.08
Intrusion	17.08	222	9.69	126	7.39
Avoidance and numbing	16.31	212	11.31	147	5.00
Hyperarousal	10.77	140	6.15	80	4.62

On the other hand, Table 5.5 indicates a significant difference between the PTSD pre- and post-mean scores of the intervention group using the IES-R as a psychometric instrument. The mean score decreased significantly from (mean=44.23) pre-programme to (mean=27.15) post-programme, with a mean difference of 17.08 between the two scores.

The mean differences of 25.08 on the DTS and 17.08 on the IES-R indicated that the multiple stressor intervention programme had a significant influence on the PTSD totals of the intervention group.

Tables 5.6 and 5.7 below present the differences in frequencies between the pre- and post-PTSD mean scores of the deployment group using both the DTS and IES-R.

Table 5.6

*DTS Deployment group*

Non-intervention group	Pre Mean	Pre Sum	Post Mean	Post Sum	Mean Difference
PTSD total	35.89	323	25.11	226	10.78
Intrusion	14.00	126	10.89	98	3.11
Avoidance and numbing	11.11	100	9.22	83	1.89
Hyperarousal	10.78	97	5.00	45	5.78

The non-intervention group also demonstrated a difference in their pre- and post-PTSD mean scores. Their mean score decreased from (mean=35.89) pre-score to (mean= 25.11) post-score, resulting in a mean difference of 10.78 between these two scores.

Table 5.7

*IES-R Deployment Group*

Non-intervention group	Pre Mean	Pre sum	Post Mean	Post sum	Mean difference
PTSD total	32.78	295	25.56	230	7.22
Intrusion	11.00	99	8.78	79	2.22
Avoidance and numbing	14.22	128	12.89	116	1.33
Hyperarousal	7.56	68	3.89	35	3.67

Table 5.7 indicates that the non-intervention group showed a slight difference in their pre- and post-PTSD mean scores. The mean score decreased from (mean=32.78) pre-score to (mean=25.56) post-score, resulting in a mean difference of 7.22 between the two scores.

The two mean differences of 10.78 (DTS) and 7.22 (IES-R) indicated that deployment exerted a significant influence on the PTSD totals of the control group.

Tables 5.8 and 5.9 below displays the global scores of the intervention and non-intervention groups on both the DTS and IES-R concerning their z values and significance levels.

Table 5.8

*PTSD Total score DTS*

	Intervention	Non-intervention	Accept/reject H1 <sub>0</sub>
	Pre-Post	Pre-Post	
Wilcoxon z	-2.691	-1.245	Reject

\*\*p&lt;0.01

\*p&lt;0.05

The Wilcoxon signed rank test revealed a statistically significant reduction in PTSD symptoms following the participation of subjects in the multiple stressor programme, intervention group  $z=-2.691$ ,  $p<0.05$  with a large effect size of ( $r=.57$ ). The effect size was calculated by using the following formula:  $r = \frac{z}{\sqrt{N}}$  (Field, 2005, p.532). The mean score on the DTS decreased from (mean=58.00) pre-programme to (mean=32.92) post-programme.

In the case of the non-intervention group, the same test also revealed a statistically significant reduction in PTSD symptoms although this group did not receive the multiple stressor programme because they were deployed elsewhere, non-intervention group  $z=-1.245$ ,  $p<0.10$  with a small to medium effect size of ( $r=.26$ ) (Cohen, 1988). Their mean score on the DTS decreased from (mean=35.89) pre-programme to (mean=25.11) post-programme.

Table 5.9

*PTSD Total score-IES-R*

	Intervention	Non-intervention	Accept/reject H1 <sub>0</sub>
	Pre-Post	Pre-Post	
Wilcoxon z	-2.040	-1.844	Reject

\*\*p&lt;0.01

\*p&lt;0.05

On the IES-R, the Wilcoxon signed rank test revealed a statistically significant reduction in PTSD symptoms following the participation of subjects in the multiple stressor programme, intervention group  $z=-2.040$ ,  $p<0.05$  with a medium to large effect size of ( $r=.43$ ) (Cohen, 1988). The mean score on the IES-R decreased from (mean=44.23) pre-programme to (mean=27.15) post-programme.

The deployment group showed a statistically significant reduction in their PTSD symptoms

following deployment, with values of  $z=-1.844$ ,  $p<0.10$  with a medium effect size of ( $r=.39$ ) for the non-intervention group (Cohen, 1988). Their mean score on the IES-R decreased from (mean=32.78) pre-programme to (mean=25.56) post-programme.

It appears that both the multiple stressor intervention programme and deployment had a significant influence on the PTSD of the respective groups although the intervention group made the most progress in dealing with their PTSD globally. This progress is indicated on the DTS,  $z=-2.691$ ,  $p<0.05$  with a large effect size of ( $r=.57$ ); and the IES-R,  $z=-2.040$ ,  $p<0.05$  with a medium to large effect size of ( $r=.43$ ).

As stated in Chapter 3, Hypothesis 1 was further subdivided into three separate problem statements (H1.1, 1.2, and 1.3) concerning the effects of the multiple stressors on the three different dimensions of PTSD which included Intrusion, Avoidance/Numbing, and Hyperarousal (American Psychiatric Association, 2000).

H1.1<sub>a</sub> - There is a difference in the degree of symptoms of Intrusion between the pre- and post-test group scores.

Tables 5.10 and 5.11 display the Intrusion scores on both the IES-R and DTS for the intervention and non-intervention groups concerning their  $z$  values and significance levels.

Table 5.10

*Impact of Event Scale-Revised (IES-R) Intrusion Dimension*

Intrusion	Intervention	Non-intervention	Accept/reject H <sub>20</sub>
	Pre-Post	Pre-Post	
Wilcoxon $z$	-1.853	-1.368	Reject

\*\* $p<0.01$

\* $p<0.05$

On the first trauma scale, a Wilcoxon signed rank test revealed a statistically significant difference in the Intrusion symptom score of participants following their participation in the multiple stressor programme, intervention group  $z= -1.853$ ,  $p<0.10$  with a medium effect size of ( $r=.39$ ) (Cohen, 1988). The mean score on the IES-R decreased from (mean=17.08) pre-programme to (mean=9.69) post-programme.

The deployment group also revealed a statistically significant difference in their Intrusion symptom score after deployment, non-intervention group  $z=-1.368$ ,  $p<0.05$  with a small to medium effect size of ( $r=.29$ ) (Cohen, 1988). Their mean score on the IES-R decreased from (mean=11.00) pre-programme to (mean=8.78) post-programme.

Table 5.11

*Davidson Trauma Scale (DTS) Intrusion Dimension*

Intrusion	Intervention	Non-intervention	Accept/reject H1 <sub>0</sub>
	Pre-Post	Pre-Post	
Wilcoxon z	-2.552**	-.949*	Reject

\*\* $p<0.01$   
\* $p<0.05$

On the second trauma scale, the Wilcoxon signed rank test revealed a statistically significant difference in the Intrusion symptom score following the participation of subjects in the multiple stressor intervention programme, intervention group  $z= -2.552$ ,  $p<0.10$  with a large effect size of ( $r=.54$ ) (Cohen, 1988). This group's mean score on the DTS decreased from (mean=17.85) pre-programme to (mean=11.08) post-programme.

Using the same non-parametric test, the deployment group revealed a statistically significant difference in their Intrusion symptom score following deployment, non-intervention group  $z=0.949$ ,  $p<0.05$  with a small to medium effect size of ( $r=.20$ ) (Cohen, 1988). The mean score on the DTS decreased from (mean=14.00) pre-programme to (mean=10.89) post-programme.

Although both groups made significant progress in dealing with this PTSD symptom, the intervention group made the most progress in this dimension. The latter is clearly indicated by this group's scores on the IES-R, with values of  $z=-1.853$ ,  $p<0.10$  with a high medium effect size of ( $r=.39$ ); and the DTS, with values of  $z=-2.552$ ,  $p<0.10$  with a large effect size of ( $r=.54$ ).

H1.2<sub>a</sub> - There is a difference in the degree of symptoms of Avoidance and Numbing between the pre- and post-test group scores.

Tables 5.12 and 5.13 below display the Avoidance and Numbing scores for the intervention and non-intervention groups concerning their z values and significance levels on both psychometric scales.

Table 5.12

*IES-R Avoidance and Numbing Dimension*

Avoidance & Numbing	Intervention	Non-intervention	Accept/reject H <sub>30</sub>
	Pre-Post	Pre-Post	
Wilcoxon z	-1.648	-.851	Reject

\*\*p<0.01

\*p<0.05

The Wilcoxon signed rank test revealed a statistically significant difference in the Avoidance and Numbing symptoms score following the participation of the subjects in the multiple stressor intervention programme, intervention group  $z=-1.648$ ,  $p<0.10$  with a medium effect size of ( $r=.35$ ) (Cohen, 1988). This group's mean score on the IES-R decreased from (mean=16.31) pre-programme to (mean=11.31) post-programme.

The deployment group also showed a statistically significant difference in their Avoidance and Numbing symptoms score after returning from deployment, non-intervention group  $z=-0.851$ ,  $p<0.05$  with a small effect size of ( $r=.18$ ) (Cohen, 1988). Their mean score on the IES-R decreased from (mean=14.22) pre-programme to (mean=12.89) post-programme.

Table 5.13

*DTS*

*Avoidance & Numbing Dimension*

Avoidance & Numbing	Intervention	Non-intervention	Accept/reject H <sub>30</sub>
	Pre-Post	Pre-Post	
Wilcoxon z	-2.671**	-.359	Reject

\*\*p<0.01

\*p<0.05

In the case of Avoidance and Numbing symptoms, the Wilcoxon signed rank test revealed a statistically significant difference in the score of these symptoms following the participation in the multiple stressor intervention programme, intervention group  $z=-2.671$ ,  $p<0.10$  with a large effect size of ( $r=.56$ ) (Cohen, 1988). The mean score on the DTS decreased from (mean=22.69) pre-programme to (mean=11.69) post-programme.

A Wilcoxon signed rank test revealed a statistically significant difference in the Avoidance and Numbing symptoms score following deployment, non-intervention group  $z=-0.359$ ,  $p<0.05$  with a none to small effect size of ( $r=.00$ ) (Cohen, 1988). Their mean score on the DTS decreased from (mean=11.11) pre-programme to (mean=9.22) post-programme.

As in the case of the first PTSD dimension of Intrusion, both groups made progress in dealing with this PTSD symptom, although the intervention group showed the greatest decline in their Avoidance/Numbing symptoms. The intervention group obtained values of  $z=-1.648$ ,  $p<0.10$  with a medium effect size of ( $r=.35$ ) on the IES-R, and  $z=-2.671$ ,  $p<0.10$  with a large effect size of ( $r=.56$ ) on the DTS.

H1.3<sub>a</sub> - There is a difference in the degree of symptoms of Hyperarousal between the pre- and post-test group scores.

Tables 5.14 and 5.15 below display the Hyperarousal scores for the intervention and non-intervention groups concerning their z values and significance levels on both the IES-R and DTS.

Table 5.14

*IES-R Hyperarousal Dimension*

Hyperarousal	Intervention	Non-intervention	Accept/reject H4 <sub>0</sub>
	Pre-Post	Pre-Post	
Wilcoxon z	-1.963*	-2.081*	Reject

\*\* $p<0.01$

\* $p<0.05$

In the last PTSD dimension, the Wilcoxon signed rank test revealed a statistically significant difference in the Hyperarousal symptom score following the participation of the subjects in the multiple stressor intervention programme, intervention group  $z= -1.963$ ,  $p<0.10$  with a medium to large effect size of ( $r=.41$ ) (Cohen, 1988). The mean score on the IES-R decreased from (mean=10.77) pre-programme to (mean=6.15) post-programme.

The same non-parametric test showed a statistically significant difference in the

Hyperarousal symptom score of the deployment group following their deployment, non-intervention group  $z = -2.081$ ,  $p < 0.05$  with a medium to large effect size of ( $r = .44$ ) (Cohen, 1988). Their mean score on the IES-R decreased from (mean=7.56) pre-programme to (mean=3.89) post-programme.

Table 5.15

*DTS Hyperarousal Dimension*

Hyperarousal	Intervention	Non-intervention	Accept/reject $H_{40}$
	Pre-Post	Pre-Post	
Wilcoxon z	-1.883	-2.492*	Reject

\*\* $p < 0.01$

\* $p < 0.05$

On the DTS, a Wilcoxon signed rank test revealed a statistically significant difference in the Hyperarousal symptom score following the participation of the subjects in the multiple stressor intervention programme, intervention group  $z = -1.883$ ,  $p < 0.10$  with a medium to large effect size of ( $r = .40$ ) (Cohen, 1988). The mean score on the DTS decreased from (mean=17.46) pre-program to (mean=10.15) post-programme.

The deployment group showed a statistically significant difference in their Hyperarousal symptom score after returning from deployment, non-intervention group  $z = 2.492$ ,  $p < 0.05$  with a large effect size of ( $r = .53$ ) (Cohen, 1988). Their mean score on the DTS decreased from (mean=10.78) pre-programme to (mean=5.00) post-programme.

Although both the intervention and deployment groups made significant progress in dealing with this *startle response symptom*, the deployment group exhibited the most progress in this dimension. This progress is indicated by the scores obtained firstly on the IES-R, namely,  $z = -2.081$ ,  $p < 0.05$  with a medium to large effect size of ( $r = .44$ ) and, secondly, on the DTS, namely,  $z = 2.492$ ,  $p < 0.05$  with a large effect size of ( $r = .53$ ). This is in contrast with the previous two PTSD dimensions, where the intervention group made the most progress in dealing with these symptoms.

In conclusion, it appears that the multiple stressor intervention programme was more effective in addressing the global PTSD symptoms of participants, but deployment on the

other hand was more effective in addressing the Hyperarousal dimension of the control group. While the previous section focused on only within group results using the Wilcoxon signed rank test, the next section focuses on between group results using the Mann-Whitney *u* test.

### 5.3.2 Between group testing

The data relating to Hypothesis 2 were all analysed using the Mann-Whitney *u* test. As in the case of the Wilcoxon signed rank test, this second non-parametric statistic was also selected due to its small sample size and is especially useful to test for differences between two independent groups (Pallant, 2010).

#### Hypothesis 2

H2<sub>a</sub> – There is a significant difference in the degree of PTSD symptoms between the intervention and control group pre- and post-test scores.

Table 5.16 displays the frequencies for both the intervention and non-intervention groups concerning their PTSD totals using the first psychometric scale, namely, the DTS.

Table 5.16

#### *PTSD Total Scores (DTS)*

	Pre-intervention	N	Mean	Post-intervention	N	Mean
PTSD Total Scores	Intervention	13	13.23	Intervention	13	12.08
	Non-Intervention	9	9.00	Non-Intervention	9	10.67
	Total	22		Total	22	

A Mann-Whitney *u* test revealed no significant difference in the PTSD symptoms for the intervention (mean=13.23, *n*=13) and non-intervention groups regarding their pre-intervention scores (mean= 9.00, *n*=9), *U*=36.000, *z*=1.503, *p*=.144, *r*=.32, using the DTS.

The same non-parametric test also revealed no significant difference in the PTSD symptoms of the intervention (mean=12.08, *n*=13) and non-intervention groups concerning their post

intervention scores (mean=10.67,  $n=9$ ),  $U=51.000$ ,  $z=-.501$ ,  $p=.647$ ,  $r=.10$ , using the DTS. These results indicated that the intervention group (mean=12.08) did not appear to differ in their global PTSD symptoms from the deployment group (mean=10.67), even after receiving multiple stressor intervention for a period of 3 months,  $U=51.000$ ,  $z=-.501$ ,  $r=.10$ . It further appears that the multiple stressor intervention programme and deployment are equally effective in addressing global PTSD.

As previously formulated in Chapter 3, Hypothesis 2 was further subdivided into three separate problem statements (H2.1, 2.2, and 2.3) concerning the effects of the multiple stressor on the three different dimensions of PTSD.

Below Table 5.17 presents these three PTSD dimensions (Intrusion, Avoidance/Numbing, and Hyperarousal) as stated in the DSM-IV-TR (American Psychiatric Association, 2000).

Table 5.17

*Three PTSD Dimensions (DTS)*

	Pre-intervention	N	Mean	Post-intervention	N	Mean
Intrusion	Intervention	13	12.54	Intervention	13	11.85
	Non-Intervention	9	10.00	Non-Intervention	9	11.00
	Total	22		Total	22	
Avoidance and Numbing	Intervention	13	13.65	Intervention	13	11.85
	Non-Intervention	9	8.39	Non-Intervention	9	11.00
	Total	22		Total	22	
Hyperarousal	Intervention	13	12.85	Intervention	13	13.08
	Non-Intervention	9	9.56	Non-Intervention	9	9.22
	Total	22		Total	22	

On the first PTSD dimension of Intrusion, a Mann-Whitney  $u$  test revealed no significant difference in these symptoms for the intervention (mean=12.54,  $n=13$ ) and non-intervention groups regarding their pre-intervention scores (mean=10.00,  $n=9$ ),  $U=45.000$ ,  $z=-.902$ ,  $p=.367$ ,  $r=.19$ , using the DTS.

The same trend was observed in the post intervention scores of participants. The Mann-Whitney  $u$  test also showed no significant difference in the Intrusion symptoms of the

intervention (mean=11.85,  $n=13$ ) and non-intervention groups post-intervention scores (mean= 11.00,  $n=9$ ),  $U=54.000$ ,  $z=-.301$ ,  $p=.763$ ,  $r=.06$ , using the same trauma scale.

On the second PTSD dimension of Avoidance and Numbing, the Mann-Whitney  $u$  test revealed no significant difference in these symptoms for the intervention (mean=13.65,  $n=13$ ) and non-intervention groups concerning their pre-intervention scores (mean=8.39,  $n=9$ ),  $U=30.500$ ,  $z=-1.872$ ,  $p=.061$ ,  $r=.39$ , using the DTS.

The same non-parametric test also demonstrated no significant difference in the Avoidance and Numbing symptoms of the intervention (mean=11.85,  $n=13$ ) and non-intervention groups regarding their post-intervention scores (mean=11.00,  $n=9$ ),  $U=54.000$ ,  $z=-.301$ ,  $p=.763$ ,  $r=.06$ , using the DTS.

On the third PTSD dimension of Hyperarousal, the Mann-Whitney  $u$  test showed no significant difference in these symptoms for the intervention (mean=12.85,  $n=13$ ) and non-intervention groups with regard to their pre-intervention scores (mean=9.56,  $n=9$ ),  $U=41.000$ ,  $z=-1.171$ ,  $p=.242$ ,  $r=.24$ , using the DTS.

Lastly, a similar trend was found on the post-intervention scores of both groups. The Mann-Whitney  $u$  test revealed no significant difference in the Hyperarousal symptoms of the intervention (mean=13.08,  $n=13$ ) and non-intervention groups in terms of their post-intervention scores (mean=9.22,  $n=9$ ),  $U=38.000$ ,  $z=-1.374$ ,  $p=.169$ ,  $r=.29$ , using the same trauma scale.

Results on all three PTSD dimensions indicated that the intervention group (Intrusion mean=11.85, Avoidance/Numbing mean=11.85, and Hyperarousal mean=13.08) did not seem to differ in their individual PTSD dimensions from the deployment group (Intrusion mean=11.00, Avoidance/Numbing mean=11.00 and Hyperarousal mean=9.22), even after receiving multiple stressor intervention for a period of 3 months (Intrusion  $U=54.000$ ,  $z=-.301$ ,  $r=.06$ , Avoidance/Numbing  $U=54.000$ ,  $z=-.301$ ,  $r=.06$ , Hyperarousal  $U=38.000$ ,  $z=-1.374$ ,  $r=.29$ ). It therefore seems that deployment is just as effective as multiple stressor intervention in addressing these three individual PTSD dimensions.

In the following two Tables (5.18 and 5.19) the focus falls on the results obtained from the second psychometric instrument, namely, the IES-R.

Table 5.18 displays the frequencies for both the intervention and non-intervention groups concerning their PTSD totals using the IES-R.

Table 5.18

*PTSD Total Scores (IES-R)*

	Pre-intervention	N	Mean	Post-intervention	N	Mean
PTSD Total Scores	Intervention	13	12.96	Intervention	13	11.23
	Non-Intervention	9	9.39	Non-Intervention	9	11.89
	Total	22		Total	22	

The Mann-Whitney  $u$  test revealed no significant difference in the PTSD symptoms of the intervention (mean=12.96,  $n=13$ ) and non-intervention groups regarding their pre-intervention scores (mean=11.23,  $n=9$ ),  $U=39.500$ ,  $z=-1.269$ ,  $p=.204$ ,  $r=.27$ , using the IES-R.

On the same non-parametric test, no significant difference was found between the PTSD symptoms of the intervention (mean=11.23,  $n=13$ ) and non-intervention groups in terms of their post intervention scores (mean=11.89,  $n=9$ ),  $U=55.000$ ,  $z=-.234$ ,  $p=.815$ ,  $r=.04$ , using the second trauma scale. Results obtained from this second trauma scale further indicated that the intervention group (mean=11.23) did not seem to differ in their global PTSD symptoms from the deployment group (mean=11.89), even after receiving the multiple stressor intervention for a period of 3 months,  $U=55.000$ ,  $z=-.234$ ,  $r=.04$ . When considering the results of both the DTS and IES-R, it can be concluded that multiple stressor intervention and deployment are equally effective in addressing PTSD globally.

Table 5.19 presents the three different dimensions comprising PTSD as stated in the DSM-IV-TR (American Psychiatric Association, 2000).

Table 5.19

*Three PTSD Dimensions (IES-R)*

	Pre-intervention	N	Mean	Post-intervention	N	Mean
Intrusion	Intervention	13	13.00	Intervention	13	11.46
	Non-intervention	9	9.33	Non-intervention	9	11.56
	Total	22		Total	22	
Avoidance and Numbing	Intervention	13	12.08	Intervention	13	10.85
	Non-intervention	9	10.67	Non-intervention	9	12.44
	Total	22		Total	22	
Hyperarousal	Intervention	13	12.58	Intervention	13	12.46
	Non-intervention	9	9.94	Non-intervention	9	10.11
	Total	22		Total	22	

In the first PTSD dimension of Intrusion, the Mann-Whitney  $u$  test revealed no significant difference in these symptoms for the intervention (mean=13.00,  $n=13$ ) and non-intervention groups regarding their pre-intervention scores (mean=9.33,  $n=9$ ),  $U=39.000$ ,  $z=-.1311$ ,  $p=.190$ ,  $r=.27$ , using the IES-R.

Similarly, no significant differences were found in the Intrusion symptoms of the intervention (mean=11.46,  $n=13$ ) and non-intervention groups concerning their post-intervention scores (mean=11.56,  $n=9$ ),  $U=58.000$ ,  $z=-.034$ ,  $p=.973$ ,  $r=.00$ , using the same trauma scale.

In the second PTSD dimension of Avoidance and Numbing, the Mann-Whitney  $u$  test revealed no significant difference in these symptoms for the intervention (mean=12.08,  $n=13$ ) and non-intervention groups in terms of their pre-intervention scores (mean=10.67,  $n=9$ ),  $U=51.000$ ,  $z=-.501$ ,  $p=.616$ ,  $r=.10$ , using the IES-R.

The same non-parametric test showed no significant difference in the Avoidance and Numbing symptoms of the intervention (mean=10.85,  $n=13$ ) and non-intervention groups concerning their post-intervention scores (mean=12.44,  $n=9$ ),  $U=50.000$ ,  $z=-.571$ ,  $p=.568$ ,  $r=.12$ , using the IES-R.

In the last PTSD dimension of Hyperarousal, a Mann-Whitney *u* test revealed no significant difference in these symptoms for the intervention (mean=12.58, *n*=13) and non-intervention groups regarding their pre-intervention scores (mean=9.94, *n*=9), *U*=44.500, *z*=-.938, *p*=.348, *r*=.20, using the IES-R.

Lastly, a Mann-Whitney *u* test also showed no significant difference in the Hyperarousal symptoms of the intervention (mean=12.46, *n*=13) and non-intervention groups in terms of their post-intervention scores (mean=10.11, *n*=9), *U*=46.000, *z*=-.839, *p*=.401, *r*=.17, on the same trauma scale.

Results obtained from the IES-R, on all three PTSD dimensions, indicated that the intervention group (Intrusion mean=11.46, Avoidance/Numbing mean=10.85 and Hyperarousal mean=12.46) did not seem to differ in their individual PTSD dimensions from the deployment group (Intrusion mean=11.56, Avoidance/Numbing mean=12.44 and Hyperarousal mean=10.11), even after receiving multiple stressor intervention for a period of 3 months (Intrusion *U*=58.000, *z*=-.034, *r*=.00, Avoidance/Numbing *U*=50.000, *z*=-.571, *r*=.12, Hyperarousal *U*=46.000, *z*=-.839, *r*=.17). When taking the results of both trauma scales (DTS and IES-R) into consideration, it can be concluded that deployment is just as effective as multiple stressor intervention in addressing these PTSD dimensions.

#### 5.4 CURRENT TRAUMATIC STRESS AND GENERAL STRESS RESULTS

Table 5.20

*Traumatic Incident during the Research Period*

Traumatic event	Number of research participants.
Physical attack on member	1

The above mentioned table (Table 5.20) indicates one type of traumatic event that took place during the research period from March to May 2012.

Table 5.21

*Types of Negative Stressors during the Research Period*

Stressors	Number of research participants.
Relationship problems	5
Financial difficulties	4
Health issues	1
Other: work related	9
Total	19

Table 5.21 presents the different types of stressors that members faced during the research period from March to May 2012.

**5.5 SUMMARY**

This chapter commenced with the descriptive statistics which described the general characteristics of the sample group. The skewness and kurtosis values indicated that the sample groups were not normally distributed. The next part of this chapter focused on presenting the hypotheses in conjunction with the two non-parametric statistical findings. On both the DTS and IES-R, the Wilcoxon signed rank test revealed a statistically significant reduction in PTSD symptoms following the participation of the intervention group in the multiple stressor intervention programme. On the three PTSD dimensions of Intrusion, Avoidance/Numbing, and Hyperarousal, the Wilcoxon signed rank test revealed statistically significant differences in these dimensional scores following the participation of the intervention group in the multiple stressor intervention programme. The non-intervention group displayed a similar pattern regarding the reduction in PTSD symptoms and PTSD dimensional scores following their non-participation in the multiple stressor intervention programme. On both trauma scales, the Mann-Whitney *u* test revealed no significant difference in the PTSD symptoms when comparing the pre- and post-intervention scores of the intervention and non-intervention groups. Similarly, the Mann-Whitney *u* test revealed no significant difference in the pre- and post-intervention scores of the three PTSD dimensions using both scales.

The next chapter furnishes a full discussion of these quantitative results and other findings.

## CHAPTER 6

### DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

#### 6.1 INTRODUCTION

This study evaluated the efficacy of the SAPS multiple stressor intervention programme at a high risk unit, namely, the National Intervention Unit (NIU) of Pretoria. The study firstly evaluated test-retest differences in PTSD symptoms within a non-intervention and a deployment group and, secondly, it also considered the differences between these two groups. This study further took cognisance of any traumatic incidents that occurred during the research period as well as negative stressors that may have influenced NIU members. In this last chapter, the statistical findings as well as the current trauma and stress results are discussed in further detail.

#### 6.2 QUANTITATIVE RESULTS

As stated previously, the Davidson Trauma Scale (DTS) and the Impact of Event Scale (IES-R) were used to track and trace the PTSD symptoms of research participants. On both scales, encouraging results were found regarding the efficacy of the multiple stressor intervention programme with regard to addressing PTSD symptoms. The Wilcoxon signed rank test revealed significant differences between the pre- and post-test scores ( $z=-2.691$ ,  $p<0.05$ , DTS, Table 5.8 and  $z=-2.040$ ,  $p<0.05$ , IES-R, Table 5.9) of the intervention group. This indicated a significant recovery of the intervention group, from the global PTSD symptoms, after receiving multiple stressor intervention.

On the other hand, the non-intervention group also revealed differences in their pre- and post-test scores. The Wilcoxon signed rank test showed significant differences between the pre- and post-test scores ( $z=-1.245$ ,  $p<0.05$ , DTS, Table 5.8, and  $z=-1.844$ ,  $p<0.05$ , IES-R, Table 5.9) of the non-intervention group which indicated that deployment had a significant influence on the global PTSD symptoms of the group. Two possible explanations can be offered for this phenomenon. Firstly, this finding was in line with the study conducted by Bernstein *et al.* (2012) which was discussed in Chapter 2. Research on Danish soldiers

revealed that 13 % of these subjects initially displayed excessive anxiety and experienced frequent nightmares after enlistment, but this pattern later changed to decreased levels of stress, especially after the first months of deployment to the war in Afghanistan. Upon their return to home soil, their high levels of stress resurfaced again. Bernsten and her colleagues theorised that those subjects who developed PTSD had had problematic childhood experiences in the form of violent punishments which had caused bruises and even broken bones which dramatically increased their vulnerability to this disorder. Furthermore, army life offered social support and true camaraderie to these soldiers, but unfortunately these mental health benefits vanished after reintegration into ordinary civilian life. In the current study, deployment also seemed to have a positive effect on PTSD in NIU members by offering social support and camaraderie as psychological benefits which confirmed the Bernsten *et al.* (2012) finding. Another reason for the pre- and post-test differences in this group could be attributed to the fact that PTSD symptoms tend to diminish over time if there is no re-exposure to ensuing triggering events. The Current Traumatic Stress and General Stress questionnaire that was employed to track traumatic and stressful events during the research period did not indicate any traumatic incidents for the non-intervention group during their deployment. This questionnaire only indicated one traumatic incident for the intervention group which is discussed in paragraph 6.4 of this chapter.

Based on the results obtained from both the intervention and deployment groups, the researcher concluded that the multiple stressor intervention programme was probably more efficient in dealing with PTSD than with deployment and the natural diminishing of PTSD. The null hypothesis of no difference in PTSD symptoms between pre- and post-test scores was thus tested and rejected.

The Wilcoxon signed rank test was also performed on the three PTSD dimensions as classified in the DSM-IV-TR (American Psychiatric Association, 2000). On the first dimension of Intrusion, significant differences were found between the pre- and post-test scores ( $z=-2.552$ ,  $p<0.10$ , DTS, Table 5.11, and  $z=-1.853$ ,  $p<0.10$ , IES- R, Table 5.10) of the intervention group. On the second dimension of Avoidance and Numbing, significant differences were also found on the DTS ( $z=-2.671$ ,  $p<0.10$ , Table 5.13) and on the IES-R ( $z=-1.648$ ,  $p<0.10$ , IES- R, Table 5.12). Even the last PTSD dimension, Hyperarousal, demonstrated significant

differences ( $z=-1.883$ ,  $p<0.10$ , DTS, Table 5.15, and  $z=-1.963$ ,  $p<0.10$ , IES-R, Table 5.14). These results therefore indicated that the intervention group made significant progress in dealing with all three individual PTSD dimensions after they had received multiple stressor intervention. Hence, the null hypotheses of no intervention effect on these three individual PTSD dimensions were rejected.

The non-intervention group made some progress in dealing with their Intrusion symptoms. Both psychometric scales indicated significant differences between the pre- and post-test scores ( $z=-0.949$ ,  $p<0.05$ , DTS, Table 5.11, and  $z=-1.368$ ,  $p<0.05$ , IES-R, Table 5.10) of the non-intervention group. On the second PTSD dimension of Avoidance and Numbing, this group made minimal to almost no progress in dealing with this dimension; with scores on the DTS being  $z=-0.359$ ,  $p<0.05$  (Table 5.13) and on the IES-R being  $z=-0.851$ ,  $p<0.05$  (Table 5.12). The last dimension, Hyperarousal, revealed an important trend for the non-intervention group, significant differences on both scales, firstly on the DTS ( $z=-2.492$ ,  $p<0.05$ , Table 5.15) and, secondly, on the IES-R ( $z=-2.081$ ,  $p<0.05$ , Table 5.14). Cohen's (1988) criteria are also important when interpreting these findings. These criteria showed a large effect size of ( $r=.53$ ) on the DTS and a medium to large effect size of ( $r=.44$ ) on the IES-R. This positive finding on the Hyperarousal dimension can be explained by the findings of a study undertaken by McTeague *et al.* (2010), which was discussed in Chapter 2. This study demonstrated that patients suffering from PTSD after a single traumatic incident exhibited more extreme startle potentiation to their fear memories than patients who had experienced multiple traumas. Conversely, patients suffering from PTSD after multiple traumatic incidents revealed less significant startle potentiation but more co-morbidity between PTSD and other psychological disorders. As stated in the DSM-IV-TR classification for PTSD (American Psychiatric Association, 2000), clients suffering from this disorder exhibit an exaggerated startle response on the Hyperarousal dimension.

Based on these within group results, the researcher concluded that the multiple stressor intervention programme reduced the PTSD symptoms of NIU police members who were allocated to the intervention group. Although both groups made significant progress in dealing with PTSD globally, the intervention group exhibited the greatest improvement in these global symptoms. When focusing on the results of the individual PTSD dimensions, it is

evident that both groups made some progress in dealing with the individual symptoms, although the non-intervention group made less progress in dealing with their Intrusion and Avoidance/Numbing symptoms. However, these results did not address between group results, which is the topic of the following paragraphs.

No significant differences were found between the post intervention test scores of the intervention and non-intervention groups using a Mann-Whitney  $u$  test ( $z=-.501$ ,  $p=.647$ , DTS, Table 5.16, and  $z=-.234$ ,  $p=.815$ , IES- R, Table 5.18). Based on these global PTSD results, the researcher concluded that there was no difference between the recovery rates of the deployment and intervention groups. It seems that deployment could be just as effective as multiple stressor intervention in dealing with PTSD in NIU members. The null hypothesis of no difference in PTSD symptoms between the post-test scores of the intervention and control groups were thus tested and accepted.

The Mann-Whitney  $u$  test was also performed on the three PTSD dimensions as classified in the DSM-IV-TR (American Psychiatric Association, 2000). On the first dimension of Intrusion, no significant differences were found between the post-test scores ( $z=-.301$ ,  $p=.763$ , DTS, Table 5.17, and  $z=-.034$ ,  $p=.973$ , IES- R, Table 5.19) of the intervention and non-intervention groups. Also, on the second dimension of Avoidance and Numbing, the Mann-Whitney  $u$  test showed no significant differences between the post-test scores ( $z=-.301$ ,  $p=.763$ , DTS, Table 5.17, and  $z=-.571$ ,  $p=.568$ , IES- R, Table 5.19) of the two groups. On the last dimension, Hyperarousal, no significant differences were found between the post-test scores ( $z=-1.374$ ,  $p=.169$ , DTS, Table 5.17, and  $z=-.839$ ,  $p=.401$ , IES- R, Table 5.19) of the intervention and non-intervention groups. Based on these PTSD dimensional results, the researcher also concluded that there were no differences between the recovery rates of the deployment and intervention groups regarding these individual PTSD symptoms. Deployment was not only effective on the global PTSD, but also on the three individual dimensions of PTSD. Hence, the null hypotheses of no intervention effect on these three PTSD dimensions were tested and accepted.

In retrospect there is some justification for continuing the use of the multiple stressor intervention programme to address trauma within the SAPS. Unfortunately, between group

results did not yield as encouraging results as the within group results. Although the multiple stressor intervention is a step in the right direction towards addressing recurrent trauma within the SAPS, this intervention programme, which was released during 2008, sadly, was never revised. By including new lesson plans based on more recent PTSD research, this intervention can be refined adequately to possibly enhance its efficacy.

### **6.3 CURRENT TRAUMATIC STRESS AND GENERAL STRESS FINDINGS**

In the only traumatic incident (Table 5.20) experienced during the research period, one of the NIU members was physically attacked and injured while being robbed of his personal belongings during April 2012. This member was one of the research participants in the experimental group. The involved member declined formal debriefing services without giving an explanation for his refusal. As stated in Chapter 1, police officers stationed at the specialised units reported that they had already been debriefed, within a group context, more than 12 times (Supt. M.S. Watson, personal communication, October 20, 2009). They even claimed to know the Jacobs model with its accompanying seven phases. Thus, it is possible that this member considered formal debriefing to be redundant due to the repeated usage of this crisis intervention tool in the past.

Table 5.21 presented an overview of the type of negative stressors that research subjects faced during the research period. Most participants experienced the same work-related stressor at the NIU, Pretoria branch which concerned the unfair discrimination against the two groups that were operating there. A clear distinction was made by the NIU management between members who had completed their advanced course in weaponry and urban tactics (level I) and those who had not (level II). Members who had completed this course were viewed by their commanders as being more competent than their counterparts. This resulted in very low morale, especially amongst the older members who had been with the NIU almost from its inception in 2000. Members reported feeling *worthless* and *rejected* by the organisation. Thus, besides experiencing multiple traumatic events, NIU members also had to contend with a stressful situation at work.

## 6.4 CONCLUSION

The lack of scientific evidence on the effectiveness of the SAPS multiple stressor intervention programme prompted the need for the present study. Although some positive results were found for the efficacy of multiple stressor interventions, especially when analysing within group results, comparison data obtained from the intervention and deployment groups did not yield encouraging results. However, the so called recovery of the non-intervention group on the third PTSD dimension of Hyperarousal is important. The current study confirms the finding of McTeague *et al.* (2010) which asserts that clients suffering from PTSD after a single incident have a focus fear disorder which implies that the defence circuit of their brain is intact, but it becomes hyperactive when confronted by trauma-related cues. In contrast, patients exposed to recurrent trauma exhibit dysfunctional normal fear or defence circuits which lead to less significant startle potentiation.

Another possible explanation for this finding concerning Hyperarousal is that members of the NIU Pretoria branch were constantly in a state of readiness for deployment to conflict situations (e.g., violent service delivery protests) which left them vigilant most of the time and unable to *switch off*. It is, however, not clear whether the working environment led to the constant arousal of the intervention group or whether the multiple stressor intervention programme did not address this PTSD dimension adequately.

Lastly, it is anticipated that this study will encourage the further development and refinement of the multiple stressor intervention programme in an attempt to find solutions for the ongoing struggle of police members with traumatic experiences which are part of their daily routine.

## 6.5 LIMITATIONS OF THE STUDY AND RECOMMENDATIONS

As previously stated in Chapter 5, a relatively small sample was used and this sample group mainly consisted of male participants. Only a few subjects represented females in the current study. Furthermore, the sample group included only black African participants, thereby excluding other minority groups within the SAPS such as Indian and white population groups.

The applicability of this new trauma intervention programme for other race groups therefore remains unanswered. Thus, sample size and representivity in this study can be criticised.

Although this study did not use randomisation to allocate subjects either to an intervention or a non-intervention group, future research should attempt to make use of this experimental approach. A larger representative sample together with the randomisation of participants open the door to parametric testing which has more statistical power than non-parametric techniques. The two non-parametric techniques employed in the current study used data ranking in order to counter the unequal distribution of scores. Unfortunately, by ranking the data certain information is lost due to the lack of magnitude in the two tests. Thus, non-parametric techniques have less statistical power than do parametric techniques which in turn are more likely to detect the genuine effects present in the data (Field, 2005).

This study encompassed only a short period of three months. It is recommended that a longitudinal study be undertaken to determine whether this intervention can effectively address PTSD symptoms over a long period while still maintaining its initial effectiveness. Unfortunately, police members working at high risk units (e.g., NIUs and the Special Task Force) are continuously exposed to traumatic events, even during their treatment period, which may affect the efficacy of the multiple stressor intervention programme and also influence the analysis of results. This consideration is in line with Malcolm *et al.* (2005) and Slawinsky (2005) who argued that critical events are usually unpredictable which makes planning for or even studying them even more difficult.

Furthermore, PTSD symptoms sometimes naturally dissipate over time without intervention (Foa *et al.*, 1995). The current study did not measure the victim's natural recovery from traumatic incidents which may have inflated the deployment and even the intervention group's success in dealing with their PTSD symptoms. In this instance it is not clear if the intervention, deployment or the natural recovery from PTSD were responsible for the two groups lower PTSD scores. However, as argued previously (see section 4.3, page 58), it is unethical to deliberately withhold an intervention from research subjects who could benefit from such an intervention. Thus, due to ethical considerations, it was not feasible to include a control group to measure the natural dissipation of PTSD symptoms over time.

Lastly, the current study focused only on PTSD with its accompanying three dimensions. The study of McTeague *et al.* (2010) has demonstrated that patients suffering from PTSD after multiple traumatic incidents displayed a less significant startle potentiation but more co-morbidity between PTSD and other psychological disorders (e.g., major depression and anxiety disorders). The current study did not focus on the relationship of co-morbidity in other psychological disorders with PTSD, which could have a significant influence on members' recovery from traumatic experiences.

## **6.6 SUMMARY**

This chapter focused mainly on the quantitative findings of the multiple stressor intervention efficacies by using two non-parametric statistical techniques. The Wilcoxon signed rank test revealed that both the intervention and non-intervention groups made significant progress in dealing with their PTSD symptoms. A Wilcoxon signed rank test was also performed on the three PTSD dimensions of Intrusion, Avoidance/Numbing, and Hyperarousal. The intervention group made significant progress in dealing with all three symptoms after receiving multiple stressor intervention over a three month period. On the other hand, the non-intervention group made significant progress in dealing with the Intrusion symptom but struggled to deal with the Avoidance and Numbing symptoms. The last PTSD dimension of Hyperarousal demonstrated an important trend for the non-intervention group. This positive result on this dimension reveals that patients suffering from PTSD after multiple traumatic experiences exhibit dysfunctional normal fear or defence circuits which lead to less significant startle potentiation (McTeague *et al.*, 2010).

Unfortunately, these results could not address between group results which required another statistical technique. According to the Mann-Whitney *u* test, no significant differences were found between the pre- and post-intervention test scores of the intervention and non-intervention groups. Even focusing on the three PTSD dimensions, the results indicated no significant differences between the pre- and post-test scores of the two groups. Although the within group results were positive, comparing the post intervention results of the two groups revealed no significant effect of this intervention on PTSD

symptoms.

Lastly, this chapter discussed the traumatic events and general stresses experienced during the research period. Only one traumatic event occurred during this period and consisted of a member being assaulted and robbed of his personal belongings. Research subjects mostly indicated a work-related stressor that negatively affected them, which in this case was the unfair discrimination between level I and level II members by the NIU managers.

Despite some of the limitations in this chapter, the study hopefully paved the way for more rigorous scientific investigations into evaluating the efficacy of the multiple stressor intervention programme to address PTSD amongst members of the SAPS.

## REFERENCES.

Addis, N., & Stephens, C. (2008). An evaluation of a police debriefing program: Outcomes for police officers five years after a police shooting. *International Journal of Police Science and Management, 10*(4), 361-373.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington D.C.

Anshel, M.W., Robertson, M., & Caputi, P. (1997). Sources of acute stress and their appraisals and reappraisals among Australian police as a function of previous experience. *Journal of Occupational and Organisational Psychology, 70*, 337-356.

Anshel, M.W. (2000). A conceptual model and implications for coping with stressful events in police work. *Criminal Justice and Behaviour, 27*, 375-400.

Antai-Otong, D. (2001). Critical stress debriefing: A health promotion model for workplace violence. *Perspectives in Psychiatric Care, 37*(4), 125-133.

Armstrong, K., Lund, P.E., McWright, L.T., & Tichenor, V. (1995). Multiple stressor debriefing and the American Red Cross. *National Association of Social Workers, 40*(1), 83-90.

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

Artwohl, A. (2002). Perceptual and memory distortions in officer-involved shootings. *FBI Law Enforcement Bulletin, 71*(10), 18-24.

Ballenger, J.C., Davidson, J.R.T., Lecrubier, Y., Nutt, D.J., Foa, E.B., Kessler, R.C., ... Shalev, A.Y. (2000). Consensus statement on posttraumatic stress disorder from the International Consensus Group on Depression and Anxiety. *Journal of Clinical Psychiatry, 61*, 60-66.

Barlow, D.H., & Durand, V.M. (2002). *Abnormal psychology: An integrated approach* (3rd ed.). Belmont: Wadsworth/Thompson Learning.

Beck, J.G., Grant, D.M., Read, J.P., Clapp, J.D., Coffey, S.F., Miller, L.M., & Palyo, S.A. (2008). The Impact of Event Scale- Revised: Psychometric properties in a sample of motor vehicle accident survivors. *Journal of Anxiety Disorders*, 22(2), 187-198.

Becker, C.B., Meyer, G., Price, J.S., Graham, M.M., Arsena, A., Armstrong, D.A., & Ramon, E. (2009). Law enforcement preferences for PTSD treatment and crisis management alternatives. *Behaviour Research and Therapy*, 47, 245-253.

Bendersky-Sacks, S.B., Clements, P.T., & Fay-Hillier, T. (2001). Care after chaos: Use of critical incident stress debriefing after traumatic workplace events. *Perspectives in Psychiatric Care*, 37(4), 133-136.

Berntsen, D., Johannessen, K.B., Thomsen, Y., Bertelsen, M., Hoyle, R., & Rubin, D. (2012). Peace and war: Trajectories of Posttraumatic Stress Disorder before, during and after military deployment in Afghanistan. *Scientific American Mind*, 23(5), 74-75.

Bisson, J.I., Jenkins, P.L., Alexander, J., & Bannister, C. (1997). Randomised controlled trial of psychological debriefing for victims of acute burn trauma. *British Journal of Psychiatry*, 171, 78-81.

Bremner, J.D., Vermetten, E., Southwick, S.M., Krystal, J.H., & Charney, D.S. (1998). Trauma, memory and dissociation: An integrative formulation. In J.D. Bremner & C. Marmar (Eds.), *Trauma, memory and dissociation*. Washington D.C: American Psychiatric Press.

Brewin, C.R. (2001). A cognitive neuroscience account of Post Traumatic Stress Disorder and its treatment. *Behaviour, Research and Therapy*, 39, 373-393.

Brewin, C.R., Andrews, B., Rose, S., & Kirk, M. (1999). Acute Stress Disorder and Post Traumatic Stress Disorder in victims of violent crime. *American Journal of Psychiatry*, 156,

360-366.

Brewin, C.R., Dalgeish, T., & Joseph, S. (1996). A dual representation theory of Post Traumatic Stress Disorder. *Psychological Review*, *103*, 670-686.

Bryant, R.A., & Harvey, A.G. (2000). *Acute Stress Disorder: A handbook of theory, assessment and treatment*. Washington, D.C.: American Psychological Association.

Burns, C., & Harm, N. (1993). Emergency nurses perception of critical incidents and stress debriefing. *Journal of Emergency Nursing*, *19*, 431-436.

Campfield, K.M., & Hills, A.M. (2001). Effect of timing of Critical Incident Stress Debriefing (CISD) on post traumatic symptoms. *Journal of Traumatic Stress*, *14*, 327-340.

Chabalala, T.G. (2004). *The experiences and perceptions of police members regarding the effectiveness of trauma debriefing within the South African Police Service*. Unpublished master's thesis, University of Pretoria, Pretoria.

Chemtob, C.M., Tomas, S., Law, W., & Cremniter, D. (1997). Post disaster psychosocial intervention: A field study of the impact of debriefing on psychological distress. *American Journal of Psychiatry*, *154*, 415-417.

Chemtob, C., Roitblat, H.L., Hamada, R.S., Carlson, J.G., & Twentyman, C.T. (1988). A cognitive action theory of Post Traumatic Stress Disorder. *Journal of Anxiety Disorders*, *2*, 253-275.

Chong, R.Y., Uhart, M., & Wand, G.S. (2007). Endogenous opiates, addiction and the stress response. In Al' Absi, M. (Ed.), *Stress and addiction: Biological and psychological mechanisms*. (pp. 85-104). Boston: Academic Press.

Cohen, J.W. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Colley, N.D. (1995). *An evaluation of the debriefing model of the South African Police Service as a crisis intervention tool*. Unpublished master's thesis, University of Stellenbosch, Cape Town.

Conlon, L., & Fahy, T.J. (2001). Psychological debriefing for acute trauma, a welcome demise? *Irish Journal of Psychological Medicine*, 18(2), 43–44.

Copes, H. (2005). *Policing and stress*. New Jersey: Pearson Education, Inc. Upper Saddle River.

Corvo, K., Dutton, D., & Chen, W. (2009). Do Duluth model interventions with perpetrators of domestic violence violate mental health professional ethics? *Ethics and Behaviour*, 19(4), 323-340.

Crafford, D. (1992). *Military Psychological Institute, South-African Defence Force: Workshop in debriefing*.

Creamer, M., Burgess, P.M., & McFarlane, A.C. (2001). Post Traumatic Stress Disorder: Findings from the Australian National Survey of Mental Health and Well-Being. *Psychological Medicine*, 31(7), 1237-1247.

Creswell, J.W. (2003). *Research design: Qualitative, quantitative and mixed methods approaches*. London: Sage.

Dass-Brailsford, P. (2007). *A practical approach to trauma: Empowering interventions*. California: Sage Publications, Inc.

Davidson, J. (2002). *Davidson Trauma Scale (DTS) technical manual*. Toronto: Multi Health Systems, Inc.

Deahl, M. (2000). Psychological debriefing: Controversy and challenge. *Australian and New Zealand Journal of Psychiatry*, 34(6), 929-939.

Deahl, M., Srinivasan, M., Jones, N., Thomas, J., Neblett, C., & Jolly, A. (2000). Preventing psychological trauma in soldiers: The role of operational stress training and psychological debriefing. *British Journal of Medical Psychology*, *73*, 77-85.

De Vos, A.S., Strydom, H., Fouche, C.B., & Delpont, C.S.L. (2002). *Research at grass roots: For the social sciences and human service professions*. (2nd ed.). Pretoria: Van Schaik Publishers.

Dixon, S.L. (1987). *Working with people in crisis, theory and practice*. Columbus, Ohio: Merrill.

Dunning, C. (1999). Post intervention strategies to reduce police trauma: A paradigm shift. In J.M. Violanti, & D. Paton (Eds.), *Police trauma: Psychological aftermath of civilian combat* (pp. 269-289). Springfield, IL: Charles C. Thomas.

Dyregrov, A. (1997). The process in psychological debriefings. *Journal of Traumatic Stress*, *10*(4), 589-604.

Everly, G.S., Jr., & Boyle, S.H. (1999). Critical Incident Stress Debriefing (CISD): A meta-analysis. *International Journal of Emergency Mental Health*, *1*, 165-168.

Everly, G.S., Boyle, S.H., & Lating, J.M. (1999). The effectiveness of psychological debriefing with vicarious trauma: A meta- analysis. *Stress Medicine*, *15*, 229-233.

Everly, G.S., & Mitchell, J.T. (1999). *Critical Incident Stress Management (CISM): A new era and standard of crisis intervention* (2 ed.). Ellicott City, MD: Chevron Publishing.

Everly, G.S., & Mitchell, J.T. (2000). The debriefing "controversy" and crisis intervention: A review of lexical and substantive issues. *International Journal of Emergency Mental Health*, *2*(4), 211-225.

Field, F.A. (2005). *Discovering statistics using SPSS*. (2nd ed.). London: Sage Publications.

Figley, C.R. (Ed.) (1985). *Trauma and its wake*. New York: Brunner/Mazel.

Foa, E.B., Hearst-Ikeda, D.E., & Perry, K.J. (1995). Evaluation of a brief cognitive-behavioural program for the prevention of chronic PTSD in recent assault victims. *Journal of Consulting and Clinical Psychology, 63*, 948-955.

Foa, E.B., Riggs, D.S., Dancu, C.V., & Rothbaum, B.O. (1993). Reliability and validity of a brief instrument for assessing Post Traumatic Stress Disorder. *Journal of Traumatic Stress, 6*(4), 459-473.

Foa, E.B., Steketee, G., & Rothbaum, B.O. (1989). Behavioural/ cognitive conceptualization of Post Traumatic Stress Disorder. *Behaviour Therapy, 20*, 155-176.

France, K. (1982). *Crisis intervention: A handbook of immediate person- to- person help*. Springfield, IL: Charles C. Thomas.

Gilliland, B.E., & James, R.K. (1993). *Crisis intervention strategies*. Belmont, CA: Brooks/ Cole Publishing.

Gordon, D.R. (2001). Democratic consolidation and community policing: Conflicting imperatives in South Africa. *Policing and Society, 11*, 121-150.

Green, B.L. (1993). Identifying survivors at risk: Trauma and stressors across events. In J.P. Wilson, & B. Raphael (Eds.), *International handbook of traumatic stress syndromes* (pp.135-144). New York: Plenum.

Griffiths, J.A., & Watts, R. (1992). *The Kempsey and Grafton bus crashes: The aftermath*. University of New England, Australia: Instructional Design Solutions.

Gurvits, T.V., Shenton, M.E., Hokama, H., Ohta, H., Lasko, N.B., Gilbertson, M.W., ... Pitman, R.K. (1996). Magnetic resonance imaging study of hippocampal volume in chronic related Post Traumatic Stress Disorder. *Biological Psychiatry, 40*, 1091-1099.

Hafen, B.Q. (1982). *The crisis intervention handbook*. New Jersey: The Free Press.

Halpern, J., & Tramontin, M. (2007). *Disaster mental health: Theory and practice*. Belmont, CA: Thomson Brooks/Cole.

Harvey, A.G., & Bryant, R.A. (1998). The relationship between Acute Stress Disorder and Post Traumatic Stress Disorder: A prospective evaluation of motor vehicle accident survivors. *Journal of Consulting and Clinical Psychology, 66*, 507-512.

Herman, J.L. (1997). *Trauma and recovery*. New York: Basic Books.

Hobbs, M., Mayou, R., Harrison, B., & Worlock, P. (1996). A randomised controlled trial of psychological debriefing for victims of road traffic accidents. *British Medical Journal, 313*, 1438-1439.

Hokanson, M., & Bonnita, W. (1996). The critical incident stress debriefing process for the Los Angeles County Fire Department: Automatic and effective. *International Journal of Emergency Mental Health, 2*(4), 249-257.

Horowitz, M.J. (1986). *Stress response syndromes*. (2nd ed.). New York: Jason Aronson.

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

Irving, P., & Long, A. (2001). Critical incident stress debriefing following traumatic life experiences. *Journal of Psychiatric and Mental Health Nursing, 8*, 307-314.

Jacobs, E. (1993). *Ontlonting van getraumatiseerde lede: Voorgestelde doelwitaksieplan*. March, 9-18.

Janoff-Bulman, R. (1985). The aftermath of victimization: Rebuilding shattered assumptions.

In C.R. Figley (Ed.), *Trauma and its wake: The study and treatment of Post Traumatic Stress Disorder* (pp. 15-35). New York: Brunner/ Mazel.

Janoff-Bulman, R. (1992). *Shattered assumptions: Towards a new psychology of trauma*. New York: The Free Press.

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

Kaplan, Z., Iancu, I., & Bodner, E. (2001). A review of psychological debriefing after extreme stress. *Psychiatric Services, 52*(6), 824-827.

Kelly, K. (2002). From encounter to text: collecting qualitative data for interpretive research. In M. Terre Blanche & K. Durrheim (Eds.), *Research in Practice: Applied Methods for the Social Sciences* (pp. 379-397). Cape Town, University of Cape Town Press, (Pty.) Ltd.

Kenardy, J.A., Webster, R.A., Lewin, T.J., Carr, V.J., Hazell, P.L., & Carter, G.L. (1996). Stress debriefing and patterns of recovery following a natural disaster. *Journal of Traumatic Stress, 9*, 37-49.

Kessler, R.C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C.B. (1995). Post Traumatic Stress Disorder in the national co- morbidity survey. *Archives of General Psychiatry, 52*, 1048-1060.

Kinchin, D. (2007). *A guide to psychological debriefing: Managing emotional decompression and Post Traumatic Stress Disorder*. London: Jessica Kingsley Publishers.

Kitaeff, J. (2011). *Handbook of police psychology*. New York: Taylor & Francis Group, LLC.

Kop, N., & Euwema, M.C. (2001). Occupational stress and the use of force by Dutch police officers. *Criminal Justice and Behaviour, 28*, 631-652.

Kopel, H.M. (1996). *Coping in police officers after traumatic exposure*. Unpublished master's thesis, Rand Afrikaans University, Johannesburg.

Kureczka, A.W. (1996). Critical incident stress in law enforcement. *FBI Law Enforcement Bulletin*, 65(2/3), 10-17.

Lane, P. (1994). Critical incident stress debriefing for health care workers. *Omega*, 28(4), 301-315.

Leonard, R., & Alison, L. (1999). Critical incident stress debriefing and its effects on coping strategies and anger in a sample of Australian police officers involved in shooting incidents. *Work and Stress*, 13(2), 144-161.

Liberman, A.M., Best, S.R., Metzler, T.J., Fagan, J.A., Weis, D.S., & Marmar, C.R. (2002). Routine occupational work stress as a risk factor for stress reactions among police officers. *Journal of Police Strategies and Management*, 25, 421-441.

Lilienfeld, S.O. (2007). Psychological treatments that cause harm. *Perspectives on Psychological Science*, 2, 53-70.

Litz, B.T., Gray, M.J., Bryant, R.A., & Adler, A.B. (2002). Early intervention for trauma: Current status and future directions. *Clinical Psychology: Science and Practice*, 9, 112-134.

Lonsway, K.A., & Welch, S. (2004). Witnessing an accidental shooting at the police training academy: Professional and psychological outcomes. *Women and Criminal Justice*, 15(3/4), 59-79.

Lord, V. (1996). An impact of community policing: Reported stressors, social support, and strain among police officers in a changing police department. *Journal of Criminal Justice*, 24, 503-522.

Lyons, J.A. (1991). Strategies for assessing the potential for positive readjustment following

trauma. *Journal of Traumatic Stress*, 4, 93-112.

Macload, M., & Paton, D. (1999). Police officers and violent crime: Social psychological perspectives on impact and recovery. In J.M. Violanti & D. Paton (Eds.), *Police Trauma: Psychological Aftermath of Civilian Combat* (pp.25-36). Springfield, IL: Charles C. Thomas Publishers, Ltd.

Marshall, S.L.A. (1944). *Island victory: The battle of Kwajalein*. New York: Penguin.

Malcolm, A.S., Seaton, J., Perera, A., Sheehan, D.C., & Van Hasselt, V.B. (2005). Critical stress debriefing and law enforcement: An evaluative review. *Brief Treatment and Crisis Intervention*, 5(3), 261-278.

Malloy, T.E., & Mayes, L. (1984). The police stress hypothesis: A critical evaluation. *Criminal Justice Behaviour*, 11, 197-224.

Malt, U.F., Karlehagen, S., Hoff, H., Herrstromer, U., Hildingson, K., Tibell, E., & Leymann, H. (1993). The effect of major railway accidents on the psychological health of train drivers: Acute psychological responses to an accident. *Journal of Psychosomatic Research*, 37(8), 793-805.

Mann, T.E., & Neece, J. (1990). Workers compensation for law enforcement related Post Traumatic Stress Disorder. *Behavioural Sciences and Law*, 8, 447-456.

Marmar, C.R., Weiss, D.S., & Pynoos, R.S. (1995). Dynamic psychotherapy of Post Traumatic Stress Disorder. In M.J. Friedman, D.S. Charney, & A.Y. Deutch (Eds.), *Neurobiological and clinical consequences of stress: From normal adaption to Post Traumatic Stress Disorder* (pp. 495-506). Philadelphia: Lippincott-Raven.

Masson, J.M. (1985). *The assault on truth: Freud's suppression of the seduction theory*. New York: Harper Collins Publishers.

Mayou, R.A., Ehlers, A., & Hobbs, M. (2000). Psychological debriefing for road traffic accident victims: Three year follow-up of a randomized controlled trial. *British Journal of Psychiatry*, 176, 589-593.

McCann, I.L., & Pearlman, L.A. (1990). *Psychological trauma and the adult survivor: Theory, therapy and transformation*. New York: Brunner/Mazel.

McLaughlin, J.A. (2002). *Understanding statistics in the behavioural sciences step by step*. Belmont: Wadsworth/Thomson learning.

McMains, M.J., & Mullins, W.C. (2006). *Crisis negotiations: Managing critical incidents and hostage situations in law enforcement and corrections*. (3rd ed.). New Providence, NJ: Matthew Bender & Company, Inc.

McTeague, L.M., Lang, P.J., Laplante, M.C., Cuthbert, B.N., Shumen, J.R., & Bradley, M.M. (2010). Aversive imagery in PTSD: Trauma recurrence, co-morbidity and physiological reactivity. *Biological Psychiatry*, 67, 346-356.

Meyer, W.F., Moore, C., & Viljoen, H.G. (1997). *Personologie: Van individu tot ekosisteem*. Sandton: Heinemann.

Miller, J. (2003). Critical stress debriefing and social work: Expanding the frame. *Journal of Social Services Research*, 30(2), 7-25.

Miller, L. (2006). *Practical police psychology: Stress management and crisis intervention for law enforcement*. Springfield, IL: Charles C. Thomas Publishers, Ltd.

Miller, L. (2006a). Critical incident stress debriefing for law enforcement: Practical models and special applications. *International Journal of Emergency Mental Health*, 8(3), 189-201.

Miller, L. (2006b). Officer involved shooting: Reaction patterns, response protocols and psychological intervention strategies. *International Journal of Emergency Mental Health*,

8(4), 239-254.

Mitchell, J.T. (1983). When disaster strikes: The critical incident stress debriefing process. *Journal of Emergency Medical Services*, 8(1), 36-39.

Mitchell, J.T., & Bray, G. (1990). *Emergency services stress: Guidelines for preserving the health and careers of emergency services personnel*. Englewood Cliffs, NJ: Prentice Hall.

Mitchell, J.T., & Everly, G.S. (1993). *Critical Incident Stress Debriefing (CISD)*. Ellicott City: Chevron Publishing Corporation.

Mitchell, J.T., & Everly, G.S. (1997). *Critical Incident Stress Debriefing (CISD): An operations manual for the prevention of traumatic stress among emergency services and disaster workers* (2nd ed.). Ellicott City, MD: Chevron.

Moran, C.C. (1998). Individual differences and debriefing effectiveness. *Australasian Journal of Disaster and Trauma Studies*, (pp. 1-12). Retrieved January 5, 2012, from [http://www.massey.ac.nz/trauma issue/1998-1/Moran1.htm](http://www.massey.ac.nz/trauma%20issue/1998-1/Moran1.htm).

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

Norris, F.H., & Hamblen J.L. (2004). Standardized self-report measures of civilian trauma and PTSD. In J.P. Wilson & T.M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 63-102). New York: Guilford Press.

O' Hara, A.F., & Violanti (2009). Police suicide: A web surveillance of national data. *International Journal of Emergency Mental Health*, 11(1), 17-23.

Orner, R. (1997). What lies ahead as they emerge from obscurity? Falklands war veterans. *Psychologist*, 10(8), 351-355.

Orner, R., & Schnyder, U. (2003). *Reconstructing early intervention after trauma*. New York: Oxford University Press.

Pallant, J. (2010). *SPSS Survival manual: A step by step guide to data analysis using SPSS*. (4th ed.). Crowns Nest, NSW: Allen & Unwin Publishers.

Paton, D., & Stephens, C. (1996). Training and support for emergency responders. In D. Paton & J. Violanti (Eds.), *Traumatic stress in critical occupations: Recognition, consequences and treatment* (pp.173-205). Springfield, IL: Charles C. Thomas.

Pendergrass, V.E., & Ostrove, N.M. (1984). A survey of stress in women in policing. *Journal of Police Science and Administration*, 12, 303-309.

Pienaar, J., & Rothmann, S. (2005). Suicide ideation in the South- African Police Service. *South African Journal of Psychology*, 35(1), 58-72.

Plaggemars, D. (2000). EAP's and critical incident stress debriefing: A look ahead. *Employee Assistance Quarterly*, 16, (1/2), 77-95.

Plug, C., Louw, D.A., Gouws, L.A., & Meyer, W.F. (1997). *Verklarende en vertalende sielkunde woordeboek*. Sandton: Heinemann.

Pueler, J.N. (1988). Community outreach after emergencies. In M. Lystad (Ed.), *Mental health response to mass emergencies: Theory and practice* (pp.239-261). New York: Brunner/Mazel.

Rainer, J., & Brown, F. (2007). *Crisis counseling and therapy*. New York: Haworth Press, Inc.

Raphael, B. (1986). *When disaster strikes: How individuals and communities cope with catastrophe*. New York: Basic Books.

Rees, B., & Smith, J. (2007). Breaking the silence: The traumatic circle of policing. *International Journal of Police Science and Management*, 10(3), 267-279.

Regehr, C., & Bober, T. (2005). *In the line of fire: Trauma in the emergency services*. New York: Oxford University Press.

Regehr, C., & Hill, J. (2000). Evaluating the efficacy of critical incident stress group debriefings. *Social Work with Groups*, 23(2), 69-79.

Regel, S. (2007). Post trauma support in the workplace: The current status and practice of Critical Incident Stress Management (CISM) and Psychological Debriefing (PD) within organizations in the UK. *Society of Occupational Medicine*, 57, 411-416.

Resick, P.A. (2001). *Stress and trauma: Clinical psychology, a modular course*. East Sussex: Psychology Press, Inc.

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

Roberts, A., & Yeager, K. (2004). *Handbook of practise focused research and evaluation*. New York: Oxford University Press.

Rose, S., Bisson, J., & Wessely, S. (1998). Psychological debriefing for preventing Post Traumatic Stress Disorder (PTSD). *The Cochrane Database of Systematic Reviews*, (2).

Rose, S., Bisson, J., & Wessely, S. (2001). Psychological debriefing for preventing Post Traumatic Stress Disorder (PTSD). *The Cochrane Database of Systematic Reviews*, (3).

Rose, S.C., Bisson, J., Churchill, R., & Wessely, S. (2009). Psychological debriefing for preventing Post Traumatic Stress Disorder (PTSD) (Review). Cochrane Collaboration. *The Cochrane Database of Systematic Reviews*, (1).

Rosen, A., Proctor, E., & Staudt, M. (2003). Targets of change and interventions in social work: An empirically based prototype for developing practice guidelines. *Research on Social*

*Work Practice*, 13(2), 208-233.

Rosen, G.M. (2004). *Post Traumatic Stress Disorder: Issues and controversies*. Chichester, UK: John Wiley & Sons, Ltd.

Rothmann, S. (2005). Expectations of and satisfaction with the South African Police Service in the North West province. *International Journal of Police Strategies and Management*, 29(2), 211-225.

Rothmann, S., & Strijdom, G. (2002). Suicide ideation in the South African Police Service in the North West province. *South African Journal of Industrial Psychology*, 28, 44-48.

SAPS. (2008). *National Instruction*, 18/98, V0.03. South- African Police Service.

SAPS. (2001). *Initial debriefing training guide*. National trauma debriefing project.

SAPS. (2003). *Employee Assistance Programme (EAP)*. South- African Police Service: Employee Assistance Services (EAS).

SAPS. (2007). *Formal debriefing training guide*. National Trauma Debriefing Project.

SAPS. (2008). *Multiple stressor facilitation guide*. South-African Police Service: Employee Assistance Services (EAS).

SAPS. (2010). *Introduction of a new rank structure for the South African Police Service*, 3/1/7.

SAPS. (2011). *The crime situation in South Africa for the period April 2009-March 2010*. Crime Intelligence, Pretoria. Retrieved September 15, 2011, from <http://www.saps.org.za>.

SAPS. (2012). *Job Description for National Intervention Unit (NIU) members*. South African Police Service: NIU Pretoria.

Scott, M.J., & Stradling, S.G. (2006). *Counseling for Post Traumatic Stress Disorder*. (3rd ed.). London: Sage Publications.

Sewell, J.D. (1983). The development of a critical life events scale for law enforcement. *Journal of Police Science and Administration*, 11, 109-116.

Shalev, A.Y., Yehuda, R., & McFarlane, A.C. (2000). *International handbook of human response to trauma*. New York: Kluwer Academic & Plenum Publishers.

Shin, L.M., Orr, S.P., Carson, M.A., Rauch, S.L., Macklin, M.L., Lasko, N.B., ... Pitman, R.K. (2004). Regional cerebral blood flow in the amygdala and medial prefrontal cortex during traumatic imagery in male and female Vietnam veterans with PTSD. *Archives of General Psychiatry*, 61, 168-176.

Slawinski, T. (2005). A strength based approach to crisis response. *Journal of Workplace Behavioural Health*, 21(2), 79-88.

Solomon, Z., Mikulincer, M., & Hobfoll, S. (1987). Objective versus subjective measure of stress and social support: Combat related reactions. *Journal of Consulting Clinical Psychology*, 55, 577-583.

SPSS. (2011). *SPSS Base 7.5 syntax reference guide*. SPSS, Inc.

Starkman, M.N., Giordani, B., Gebarski, S.S., Berent, S., Schork, M.A., & Scheingart, D.E. (1999). Decrease in cortisol reverses human hippocampal atrophy following treatment of Cushing's disease. *Biological Psychiatry*, 46, 1595-1602.

Stephens, C., & Miller, I. (1998). Traumatic experiences of Post Traumatic Stress Disorder in the New Zealand police. *Journal of Policing*, 21, 178-191.

Stevens, D.J. (1999a). Do college educated officers provide quality police service? *Law and Order*, 47(12), 37-41.

Stevens, D.J. (1999b). Corruption among narcotic officers: A study of innocence and integrity. *Journal of Police and Criminal Psychology*, 14(2), 1-11.

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

Sue, D., Sue, D., & Sue, S. (1997). *Understanding abnormal behaviour*. (5th ed.). Boston: Houghton Mifflin.

Sundin, E.C., & Horowitz, M.J. (2002). Impact of Event Scale: Psychometric properties. *British Journal of Psychiatry*, 180, 205-209.

Thyer, B. (2004). What is evidence based practice? *Brief treatment and crisis intervention*, 4, 167-176.

Van Emmerik, A.A.P., Kamphuis, J.H., Hulsbosch, A.M., & Emmelkamp, P.M.G. (2002). Single session debriefing after psychological trauma: A meta- analysis. *Lancet* (9/7), 360, 766-771.

Van Staden, P. (Executive Producer). (2010, October 14). *SABC 2 news*. Johannesburg: Public Broadcasting Service.

Vila, B., Morrison, G.B., & Kenney, D.J. (2002). Improving shift schedule and work hour policies and practices to increase police officer performance, health and safety. *Police Quarterly*, 5, 4-24.

Violanti, J.M. (1996). Trauma, stress and police work. In D. Paton & J.M. Violanti (Eds.), *Traumatic stress in critical operations* (pp.87-112). Springfield, IL: Charles C. Thomas Publishers, Ltd.

Violanti, J.M. (2000). Scripting trauma: The impact of pathogenic intervention. In J. Violanti,

D. Paton, & C. Dunning (Eds.), *Posttraumatic stress intervention: Challenges, issues and perspectives* (pp. 153-165). Springfield, IL: Charles C. Thomas.

Violanti, J.M. (2004). Predictors of police suicide ideation. *Suicide and Life Threatening Behaviour, 34*(3), 277-283.

Warheit, G.J. (1988). Disasters and their mental health consequences: Issues, findings and future trends. In M. Lystad (Ed.), *Mental health responses to mass emergencies: Theory and practise* (pp. 3-21). New York: Brunner/Mazel.

Weis, D.S., & Marmar, C.R. (1997). The Impact of Event Scale-Revised. In J.P. Wilson & T.M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp 399-411). New York: Guilford.

Weis, D.S. (2003). The Impact of Event Scale-Revised. In J.P. Wilson & C. So-Kum Tang (Eds.), *Cross- cultural assessment of psychological trauma and PTSD* (pp.219-238). New York: Guilford Press.

Weis, D.S. (2004). The Impact of Event Scale-Revised. In J.P. Wilson & T.M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 168-189). New York: Guilford Press.

Whiteside, A., & Sunter, C. (2000). *Aids the challenge for South Africa*. Cape Town: Human & Rousseau.

Williams, M., & Sommer, J.F. (2002). *Simple and complex PTSD*. New York: Haworth Press, Inc.

Wilson, F.C., Poole, A.D., & Trew, K. (1997). Psychological distress in police officers following critical incidents. *The Irish Journal of Psychology, 18*, 321-340.

Wolfaardt, (2002). Basic concepts. In C. Foxcroft & G. Roodt (Eds.), *An Introduction to Psychological Assessment in the South-African Context* (pp. 34-68). Cape Town: Oxford University Press Southern Africa.

Yassen, J., & Harvey, M.R. (1998). Crisis assessment and interventions with victims of violence. In P.M. Kleespies (Ed.), *Emergencies in mental health practise* (pp.117-143). New York: Guilford.

**APPENDIX A**

**GENERAL DEMOGRAPHIC QUESTIONNAIRE**



6. By attending this intervention I take personal responsibility for my own mental well-being and to empower myself with psychological knowledge that may possibly enrich my quality of life.
7. Any of the information supplied by myself (e.g. biographical information) will be treated confidentially and ethically by the researcher.
8. Attending the multiple stressor intervention will not negatively affect any of my promotions or transfers in future.

-----Signed.  
-----Date.  
-----Place.

**APPENDIX B**

**CURRENT TRAUMATIC AND GENERAL STRESS QUESTIONNAIRE**

**Questionnaire**

1. Were you involved in a traumatic incident the past two weeks?

Yes-----

No-----

(Please indicate with x).

If yes, please indicate the type of incident with an x:

- a) Shooting incidents where a member was shot or where a member shot another person-----
- b) Any other shooting incident where a member was directly involved-----
- c) Members affected by a suicide or a suicide attempt-----
- d) Any physical attack on a member or members of his/her unit-----
- e) Bomb blasts-----
- f) Members exposed to gruesome scenes (e.g. murder scenes)-----
- g) Hostage taking-----
- h) Extreme forms of provocation (e.g. during service delivery protests)-----

2. What kind of negative stressors do you currently face in your life? (Mark with x or elaborate).

- a) Relationship problems-----
- b) Financial difficulties-----
- c) Pending disciplinary hearing-----
- d) Other (Please list them if any)-----  
-----  
-----  
-----
- e) None-----

## **APPENDIX C**

### **IMPACT OF EVENT SCALE-REVISED (IES-R)**

## IMPACT OF EVENT SCALE - REVISED

**INSTRUCTIONS:** Below is a list of difficulties people sometimes have after stressful life events.

Please read each item, and then indicate how distressing each difficulty has been for you **DURING THE PAST SEVEN DAYS** with respect to \_\_\_\_\_, how much were you distressed or bothered by these difficulties?

	Not at All	A little Bit	Moderately	Quite a Bit	Extremely
1. Any reminder brought back feelings about it.	0	1	2	3	4
2. I had trouble staying asleep.	0	1	2	3	4
3. Other things kept making me think about it.	0	1	2	3	4
4. I felt irritable and angry.	0	1	2	3	4
5. I avoided letting myself get upset when I thought about it or was reminded of it.	0	1	2	3	4
6. I thought about it when I didn't mean to.	0	1	2	3	4
7. I felt as if it hadn't happened or wasn't real.	0	1	2	3	4
8. I stayed away from reminders about it.	0	1	2	3	4
9. Pictures about it popped into my mind.	0	1	2	3	4
10. I was jumpy and easily startled.	0	1	2	3	4
11. I tried not to think about it.	0	1	2	3	4
12. I was aware that I still had a lot of feelings about it, but I didn't deal with them.	0	1	2	3	4
13. My feelings about it were kind of numb.	0	1	2	3	4
14. I found myself acting or feeling like I was back at that time.	0	1	2	3	4
15. I had trouble falling asleep.	0	1	2	3	4
16. I had waves of strong feelings about it.	0	1	2	3	4
17. I tried to remove it from my memory.	0	1	2	3	4
18. I had trouble concentrating.	0	1	2	3	4
19. Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart.	0	1	2	3	4
20. I had dreams about it.	0	1	2	3	4
21. I felt watchful and on guard.	0	1	2	3	4
22. I tried not to talk about it.	0	1	2	3	4

**APPENDIX D**

**DAVIDSON TRAUMA SCALE (DTS)**

## DAVIDSON TRAUMA SCALE

by Jonathan R.T. Davidson, M.D.

Client ID: \_\_\_\_\_ Age: \_\_\_\_\_ Sex:  Male  Female

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Please identify the trauma that is most disturbing to you.

\_\_\_\_\_

Each of the following questions asks you about a specific symptom. For each question, consider how often in the last week the symptom troubled you and how severe it was. In the two boxes beside each question, write a number from 0 - 4 to indicate the frequency and severity of the symptom.

**FREQUENCY**

0 = Not At All  
1 = Once Only  
2 = 2 - 3 Times  
3 = 4 - 6 Times  
4 = Every Day

**SEVERITY**

0 = Not At All Distressing  
1 = Minimally Distressing  
2 = Moderately Distressing  
3 = Markedly Distressing  
4 = Extremely Distressing

- |                                                                                                                                                           |                      |                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|
| 1. Have you ever had painful images, memories, or thoughts of the event?                                                                                  | <input type="text"/> | <input type="text"/> |
| 2. Have you ever had distressing dreams of the event?                                                                                                     | <input type="text"/> | <input type="text"/> |
| 3. Have you felt as though the event was recurring? Was it as if you were reliving it?                                                                    | <input type="text"/> | <input type="text"/> |
| 4. Have you been upset by something that reminded you of the event?                                                                                       | <input type="text"/> | <input type="text"/> |
| 5. Have you been physically upset by reminders of the event? (This includes sweating, trembling, racing heart, shortness of breath, nausea, or diarrhea.) | <input type="text"/> | <input type="text"/> |
| 6. Have you been avoiding any thoughts or feelings about the event?                                                                                       | <input type="text"/> | <input type="text"/> |
| 7. Have you been avoiding doing things or going into situations that remind you of the event?                                                             | <input type="text"/> | <input type="text"/> |
| 8. Have you found yourself unable to recall important parts of the event?                                                                                 | <input type="text"/> | <input type="text"/> |
| 9. Have you had difficulty enjoying things?                                                                                                               | <input type="text"/> | <input type="text"/> |
| 10. Have you felt distant or cut off from other people?                                                                                                   | <input type="text"/> | <input type="text"/> |
| 11. Have you been unable to have sad or loving feelings?                                                                                                  | <input type="text"/> | <input type="text"/> |
| 12. Have you found it hard to imagine having a long life span and fulfilling your goals?                                                                  | <input type="text"/> | <input type="text"/> |
| 13. Have you had trouble falling asleep or staying asleep?                                                                                                | <input type="text"/> | <input type="text"/> |
| 14. Have you been irritable or had outbursts of anger?                                                                                                    | <input type="text"/> | <input type="text"/> |
| 15. Have you had difficulty concentrating?                                                                                                                | <input type="text"/> | <input type="text"/> |
| 16. Have you felt on edge, been easily distracted, or had to stay "on guard"?                                                                             | <input type="text"/> | <input type="text"/> |
| 17. Have you been jumpy or easily startled?                                                                                                               | <input type="text"/> | <input type="text"/> |

## APPENDIX E

### DTS TABLE

**DTS Table:**  
**Ratio of Expected Number of Individuals With PTSD to Individuals Without PTSD**  
**(Higher ratios indicate higher probability of having PTSD)**

DTS	Ratio: (e.g., an entry of 4.00 means that, of those scoring of the DTS Score or higher, there were 4 with PTSD for every 1 without PTSD)		Ratio: (e.g., an entry of 4.00 means that, of those scoring of the DTS Score or higher, there were 4 with PTSD for every 1 without PTSD)			
	Non-PTSD ≥ DTS <sup>1</sup>	PTSD ≥ DTS <sup>1</sup>	A	B	C	D
0	100.00%	100.00%	1.00	0.11	0.43	2.33
1	86.74%	97.01%	1.12	0.12	0.48	2.61
2	86.74%	97.01%	1.12	0.12	0.48	2.61
3	81.92%	97.01%	1.18	0.13	0.51	2.76
4	79.51%	95.52%	1.20	0.13	0.51	2.80
5	73.49%	95.52%	1.30	0.14	0.56	3.03
6	71.08%	94.02%	1.32	0.15	0.57	3.09
7	66.26%	92.53%	1.40	0.16	0.60	3.26
8	63.85%	92.53%	1.45	0.16	0.62	3.38
9	61.44%	92.53%	1.51	0.17	0.65	3.51
10	59.03%	92.53%	1.57	0.17	0.67	3.66
11	57.83%	92.53%	1.60	0.18	0.69	3.73
12	55.42%	91.04%	1.64	0.18	0.70	3.83
13	49.39%	91.04%	1.84	0.20	0.79	4.30
14	49.39%	91.04%	1.84	0.20	0.79	4.30
15	48.19%	91.04%	1.89	0.21	0.81	4.41
16	45.78%	91.04%	1.99	0.22	0.85	4.64
17	39.75%	89.55%	2.25	0.25	0.97	5.26
18	36.14%	88.05%	2.44	0.27	1.04	5.68
19	33.73%	88.05%	2.61	0.29	1.12	6.09
20	32.53%	86.56%	2.66	0.30	1.14	6.21
21	31.32%	85.07%	2.72	0.30	1.16	6.34
22	28.91%	85.07%	2.94	0.33	1.26	6.87
23	25.30%	82.08%	3.24	0.36	1.39	7.57
24	20.48%	82.08%	4.01	0.45	1.72	9.35
25	20.48%	80.59%	3.94	0.44	1.69	9.18
26	19.27%	80.59%	4.18	0.46	1.79	9.76
27	18.07%	80.59%	4.46	0.50	1.91	10.41
28	16.86%	79.10%	4.69	0.52	2.01	10.94
29	15.66%	77.61%	4.96	0.55	2.12	11.56
30	13.25%	76.11%	5.74	0.64	2.46	13.40
31	12.04%	74.62%	6.19	0.69	2.65	14.45
32	12.04%	73.13%	6.07	0.67	2.60	14.16
33	12.04%	71.64%	5.95	0.66	2.55	13.87
34	10.84%	70.14%	6.47	0.72	2.77	15.10
35	10.84%	70.14%	6.47	0.72	2.77	15.10
36	9.63%	70.14%	7.28	0.81	3.12	16.98
37	7.22%	70.14%	9.70	1.08	4.16	22.64
38	7.22%	68.65%	9.50	1.06	4.07	22.16
39	4.81%	68.65%	14.25	1.58	6.11	33.24
40	4.81%	68.65%	14.25	1.58	6.11	33.24
41	3.61%	67.16%	18.58	2.06	7.96	43.36
42	3.61%	65.67%	18.17	2.02	7.79	42.39
43	3.61%	64.17%	17.76	1.97	7.61	41.43
44	3.61%	61.19%	16.93	1.88	7.26	39.50
45	3.61%	59.70%	16.52	1.84	7.08	38.54
46	2.40%	58.20%	24.16	2.68	10.35	56.37
47	2.40%	56.71%	23.54	2.62	10.09	54.92
48	1.20%	56.71%	47.07	5.23	20.17	109.84
49	1.20%	55.22%	45.84	5.09	19.64	106.95
50	1.20%	55.22%	45.84	5.09	19.64	106.95
51	1.20%	55.22%	45.84	5.09	19.64	106.95
52	1.20%	55.22%	45.84	5.09	19.64	106.95
53	1.20%	55.22%	45.84	5.09	19.64	106.95
54	1.20%	53.73%	44.60	4.96	19.11	104.06
55	1.20%	53.73%	44.60	4.96	19.11	104.06
56	1.20%	52.23%	43.36	4.82	18.58	101.17
57	1.20%	52.23%	43.36	4.82	18.58	101.17
58	1.20%	50.74%	42.12	4.68	18.05	98.28
59	1.20%	50.74%	42.12	4.68	18.05	98.28
60	1.20%	50.74%	42.12	4.68	18.05	98.28
61	1.20%	50.74%	42.12	4.68	18.05	98.28
62	0.00%	50.74%	.	.	.	.
63	0.00%	50.74%	.	.	.	.
64	0.00%	46.26%	.	.	.	.
65	0.00%	44.77%	.	.	.	.
66	0.00%	44.77%	.	.	.	.
67	0.00%	43.28%	.	.	.	.
68	0.00%	43.28%	.	.	.	.
69	0.00%	43.28%	.	.	.	.
70	0.00%	41.79%	.	.	.	.
71	0.00%	41.79%	.	.	.	.
72	0.00%	41.79%	.	.	.	.
73	0.00%	41.79%	.	.	.	.
74	0.00%	41.79%	.	.	.	.
75	0.00%	41.79%	.	.	.	.
76	0.00%	38.80%	.	.	.	.
77	0.00%	37.31%	.	.	.	.
78	0.00%	32.83%	.	.	.	.
79	0.00%	31.34%	.	.	.	.
80	0.00%	31.34%	.	.	.	.
81	0.00%	29.85%	.	.	.	.
82	0.00%	29.85%	.	.	.	.
83	0.00%	28.35%	.	.	.	.
84	0.00%	28.35%	.	.	.	.
85	0.00%	28.35%	.	.	.	.
86	0.00%	26.86%	.	.	.	.
87	0.00%	26.86%	.	.	.	.
88	0.00%	26.86%	.	.	.	.
89	0.00%	25.37%	.	.	.	.
90	0.00%	25.37%	.	.	.	.
91	0.00%	25.37%	.	.	.	.
92	0.00%	25.37%	.	.	.	.
93	0.00%	22.38%	.	.	.	.
94	0.00%	22.38%	.	.	.	.
95	0.00%	22.38%	.	.	.	.
96	0.00%	22.38%	.	.	.	.
97	0.00%	22.38%	.	.	.	.
98	0.00%	20.89%	.	.	.	.
99	0.00%	20.89%	.	.	.	.
100+	0.00%	20.89%	.	.	.	.

Copyright © 1996, Multi-Health Systems Inc. All rights reserved. In the United States, P.O. Box 950, North Tonawanda, NY 14120-0950, 1-800-456-3003. In Canada, 3770 Victoria Park Ave., Toronto, ON M2H 3M6, 1-800-268-6011, 1-416-492-2627, fax 1-416-492-3343.