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**PREVALENCE OF POST TRAUMATIC STRESS DISORDER,  
AND COPING STRATEGIES, AMONG  
FORMER SOUTH AFRICAN NATIONAL SERVICEMEN**

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A research report submitted to the Faculty of Health Sciences,  
University of the Witwatersrand,  
in partial fulfilment of the requirements for the degree of  
Master of Medicine in the branch of Family Medicine

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(Honours)(Psychology)

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## DECLARATION

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I, Martin Anthony Connell declare that this research report is my own work. It is being submitted for the degree of Master of Family Medicine in the University of the Witwatersrand, Johannesburg. It has not been submitted for any degree or examination at this or any other university.

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this \_\_\_\_\_<sup>th</sup> day of \_\_\_\_\_, 2011

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## DEDICATION

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TO THÉRÈSE MARIE AND GABRIELA

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## ABSTRACT

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**Purpose:** To determine the prevalence of post-traumatic stress disorder (PTSD), and the extent of resilience among former national servicemen who had matriculated from a Johannesburg high school from 1975 to 1988.

**Design & Methods:** A quantitative design which utilised an anonymous, internet-based questionnaire accessed a sample of former national servicemen. Demographic data such as year of intake to national service, current occupation, the type of service unit, combat exposure, drug and alcohol use, exposure to other traumatic events, and recourse to medication and counselling were obtained. The Impact of Event Scale – Revised (IES-R) was used to measure prevalence of PTSD and the Connor Davidson Resilience Scale (CD-RISC) was chosen to provide a measure of coping. A sample of 109 men was traced out of a possible population of 1527. They were contacted via email and invited to participate in the anonymous web-based questionnaire. Data was processed from the Wits Health Sciences website via a Microsoft Excel worksheet to the STATA version 11 statistical software package and were subjected to regression analysis using the chi square test and Spearman's rho.

**Results:** The response rate was 49.5% of the sample of 109. The PTSD level in this sample was 33% and was statistically significantly associated with combat exposure. There was no association between the IES-R and the CD-RISC. Only 5.6% of respondents scored in the range for PTSD on the CD-RISC suggesting high levels of resilience in this sample. Current cannabis use was significantly linked with PTSD.

**Conclusions.** The PTSD prevalence in this population of former national servicemen is higher than in comparable international studies. The primary care practitioner needs to consider prior exposure to national service or combat in routine history-taking and to consider PTSD when former national servicemen present with anxiety symptoms, depression, somatisation disorder, irritable bowel syndrome, chronic pain or substance abuse disorder.

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And most of all to my wife Terry.

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## CHAPTER 1

### INTRODUCTION

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Between 1975 and 1989 approximately 600 000 young white males were conscripted into the South African Defence Force (SADF) during the Border War.<sup>1,2</sup> A large proportion were subsequently drafted for so-called border duty and exposed to combat, some witnessed or participated in atrocities, and many had contact with the casualties of the war. Today these ex-combatants are aged between 39 and 54 years of age. Although literature on other conflicts from World War I onwards is prolific and the subject of on-going debate and research, there has been very little written on the Border War<sup>1</sup>. It is likely that the South African Border War, (as well as the War of Liberation of which it was one theatre), has left large numbers of ex-combatants with emotional and psychological wounds. This problem has largely been ignored.<sup>3,4</sup>

The term 'Border War' requires some explanation: It applies mainly to hostilities in northern Namibia and Southern Angola. This was an area designated an 'operational area' meaning an area with access limited to the military and the local population and under heavy surveillance by security forces. However, its common usage also encompasses hostilities on the borders with Mozambique, Zimbabwe and Botswana as well as incursions into these countries.

The researcher could not find any studies into the prevalence of PTSD and coping in former national servicemen in South Africa. The Border War lasted from October 1975 when Battle-Group Foxbat engaged the Popular Armed Forces for the Liberation of Angola (FAPLA) until April 1989 when a ceasefire was declared in preparation for the handing over of power to the United Nations Transitional Assistance Group (UNTAG) and the first general election in the territory now called Namibia. There were significant clashes even after this time in the neighbouring territories and in South African townships where there was a continuing police and army presence.

The aims of this research were to determine the prevalence of PTSD and the extent of resilience as an index of coping in a sample of former national servicemen who attended, and matriculated from, an English-speaking high school in Johannesburg.

To this end a sample of graduates from a Johannesburg high school filled out a web-based questionnaire. The school selected was Parktown Boys' High School, a monastic government school which was founded in 1923. During the years which this study covers it only served the white community, although there were a small number of Chinese learners at the school. As a government school it was funded entirely by the Department of Education. The school participated fully in the militarisation of the country: the curriculum was government approved, there was an active cadets program and students were obliged to register for national service in their 16<sup>th</sup> year. The student body of the time drew from a range of both blue-collar and white-collar homes, as well as the Jewish Orphanage and the Greek Hostel. It served working class neighbourhoods such as Hillbrow, Yeoville, Troyeville, Jeppe and other central Johannesburg suburbs: the Southern suburbs of Johannesburg such as Rosettenville, Turffontein and Booyssens; as well as the middle and upper middle class neighbourhoods of the North Central suburbs, including Houghton, Saxonwold, Parkhurst, Parktown North, Randburg, Ferndale and Kensington B. Although the majority of the boys were English-speaking South Africans, there was a large minority of boys from Portuguese- and Greek-speaking homes, as well as a small number of Afrikaans-speaking boys. Religious denominations represented were Roman Catholic, Anglican, other Protestant Christian, Greek Orthodox and Jews. There were no Muslims, Buddhists or other religions represented and categories such as atheist or agnostic were not recognised by the school at the time.

The intention of this study is to raise awareness in Family Practitioners of the pervasive medical and psychological problem of complex PTSD in this group. It also hopes to contribute to the growing movement to name and quantify the lasting psychological effects of war on combatants.

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## CHAPTER 2

### LITERATURE REVIEW

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This chapter begins with a description of the literature search. The diagnostic criteria for Post-Traumatic Stress Disorder (PTSD) are summarised. The South African literature on national service, (with its minimal focus on PTSD) is reviewed. This literature stems mainly from the disciplines of sociology and psychology. Extensive and relevant international literature regarding PTSD prevalence is presented. Some aspects of this field of research are highlighted, including the way the type of measurement instrument used influences the results. The relevance of this condition in a primary care setting such as Family Practice is explored. A review of the psychometric instruments for measuring PTSD follows. Later sections deal with definitions, measuring instruments and the literature on Coping and Resilience.

#### 2.1 Literature Sources

A search was done at the libraries of the University of the Witwatersrand and yielded the following books: the *Diagnostic and Statistical Services Manual (DSM IV – Text Revision)*<sup>5</sup> which contains the current definition (2000) of Post-Traumatic Stress Disorder; and the DSM III-R version of the manual<sup>6</sup> used in the landmark National Vietnam Veterans Study (NVVRS) of 1988 (also found in the library), a 2006 monograph by Professor Friedman of the US Department of Veteran Affairs National Centre for PTSD<sup>7</sup> and a comprehensive text by Dr Judith Herman<sup>8</sup> published in 1992. Two seminal peer-reviewed books straddling sociology, history, literature and political science were *Beyond the Border War: New Perspectives on Southern Africa's Late-Cold War Conflicts* edited by Gary Baines and Peter Vale<sup>9</sup> in 2008, and the 1989 *War and Society: The Militarisation of South Africa* edited by Jacklyn Cock and Laurie Nathan.<sup>10</sup>

Further searches were done using psychINFO, CINAHLPlus, Medline, the Cochrane Database of Clinical Reviews, and the Psychology and Behavioural Sciences Collection. Google and Google Scholar were also used. Grey literature holdings at South African universities yielded only five master's dissertations. There were no international grey literature holdings.

Official and government sources with relevant data were Volumes Four and Five of the Truth and Reconciliation Commission Report<sup>11,12</sup> and a finding of the amnesty committee of the Truth and Reconciliation Committee (TRC) in respect of a military medic conscript could be found on the Department of Justice website.<sup>13</sup>

The scarcity of literature on this subject is striking, considering that the Border War lasted 15 years and the War of Liberation as a whole lasted nearly 30 years.

## **2.2 Definition of PTSD**

The diagnostic criteria for PTSD were first formally delineated in the Diagnostic & Statistical Manual of Psychiatric Disorders (DSM III) in 1980.<sup>6</sup> These criteria have been amended and re-worked since, and the latest version is the DSM-IV-TR (fourth edition with text revision).<sup>5</sup>

According to Lange et al. in an American Family Physician article in 2000, the four DSM-IV-TR criteria on which the diagnosis of PTSD is based can be summarized as follows:

- First, a traumatic event occurred in which the person witnessed or experienced actual or threatened death or serious injury and responded with intense fear, horror or helplessness;
- Second, on exposure to memory cues, the person has reexperiencing symptoms, such as intrusive recollections, nightmares, flashbacks or psychologic distress;
- Third, the patient avoids trauma-related stimuli and feels emotionally numb; and,
- Fourth, the person has increased arousal, manifested by hypervigilance, irritability or difficulty sleeping.

The symptoms persist for at least one month and significantly disturb the patient's social or occupational functioning (or both)<sup>14(p.1036)</sup>

### 2.3 South African literature on the Border War

Studies on the experience of South African national servicemen have been limited mainly to contributions from the disciplines of psychology and sociology. There are two articles published in 1986 that deal with assessing the endurance fitness program of the SADF.<sup>15,16</sup> These articles quote studies on national servicemen by Cilliers (1979), Van Rensburg et al. (1982) and Cilliers and Gordon (1983), which deal only with physical fitness training of national servicemen. There is one article which deals with the prevalence of drug use by national servicemen in the SADF in 1972, prior to the period of this study.<sup>17</sup>

This scarcity of studies points to a significant national amnesia: we live as if the war had never happened.<sup>1</sup> The reasons for this are in part attributable to the secrecy in which the war was conducted, and in part to the fact that the combatants on the one side were part of a discredited regime<sup>18</sup> while the combatants on the other were increasingly marginalised in the new dispensation.<sup>3,19,20</sup> Nomfundo Mogapi of the Centre for the Study of Violence and Reconciliation writes: 'The reintegration process for ex-combatants focused mainly on participating in joining the new South African National Defence Force (SANDF) or being demobilized. Some of these ex-soldiers joined other sectors of government and business, others received financial packages. A considerable amount of effort and money was put into offering vocational training courses in order to help them develop skills to enable their full reintegration into society. But most of them lost their jobs and are poor, even if they received financial packages'<sup>19(p.222)</sup> Both Everatt and Jennings<sup>4</sup> and Naidoo<sup>20</sup> note that the process of demobilization, disarmament, and reintegration of ex-combatants in the liberation forces in South Africa has had serious flaws with respondents indicating that they are marginalized and poor and no better off after the transition to democracy.

From a psychology perspective Draper, in an unpublished master's dissertation, interviewed seventeen former national servicemen in 1999, and itemised their responses into themes of militarization, anti-communism, coping, re-adjustment, effect on current life and violence.<sup>21</sup> However, although her study contains discourses that can be specifically ranked in terms of the

features of PTSD, (intrusive memory, numbing and avoidance, and hyperarousal), there is no formal treatment of this in her results or discussion. Respondents noted that there had been no form of debriefing prior to returning from scenes of violence and combat to civilian life. Some respondents expressed gratitude for the opportunity to revisit their narratives within the context of this study. These responses speak to the value of social support in augmenting coping.

Price identified key socialization processes of masculinity, patriotism, and pride in the military in a qualitative social-psychological study of a sample of six conscripts interviewed in 1989.<sup>22</sup> Although her study produced a rich variety of data that is suitable for content analysis, her analysis and paradigm did not look at PTSD beyond commenting that she perceived “unconscious and conscious repression” in her informants<sup>22(p.147)</sup> and that there were “difficulties adjusting to the community beyond the institution”<sup>22(p.220)</sup>

Koen, in a 1991 master’s research report documents a case study of his 23-session treatment of a former operations medic. He demonstrates the successful utilization of cognitive restructuring techniques. He observes that there is paucity of literature on the subject of combat-related post-traumatic stress disorder in South Africa. His study demonstrates the long term nature of psychotherapy for PTSD and raises questions about the capacity of PTSD sufferers in South Africa to afford therapy.<sup>23</sup>

There is only one unpublished study found by the researcher that examines PTSD in combatants in the SADF in South Africa. This was done in 1989 by Hodgson, and submitted in partial fulfillment of a psychology master’s degree in 1992.<sup>24</sup> This study is the only one that provides a prevalence rate for PTSD in the SADF. The study also validated the Combat Scale of the Mississippi Post Traumatic Stress Disorder (M-PTSD) scale for use in a South African context. This study focused on permanent force (regular force) members only, and had two cohorts, the high-combat group (n=89) and the non-combat group (n=37). He found a statistically significant difference between the PTSD score for the high combat group (mean score 64.34) compared to the non-combat group (mean score 48.35). Only one of the respondents in the high combat group, however, scored

above 107, the cut-off score for PTSD. This would give a prevalence rate of only 1.1% in his study. This low prevalence in permanent force members could be accounted for by their identification with the ideology of war and combat. The convenience sampling methodology suffered from certain problems which could have adjusted the prevalence figures down: respondents had to voluntarily complete the questionnaire while in the Operations Centre of the battalion (not named), and there appears to have been no guarantee of the anonymity of responses.

From a sociology perspective Gear<sup>3</sup> and Mogapi<sup>19</sup> analysed focus group discussions involving permanent force SADF members and national servicemen as well as members of the former armed resistance movements. These studies focused primarily on the difficulties these men had with reintegration into civilian life in the new South Africa. Gear noted in a 2002 research report for the Centre for the Study of Violence and Reconciliation that ex-combatants faced many difficulties re-integrating into society and itemised patterns of marginalisation and exclusion: the contribution to the transition to democracy in South Africa made by ex-combatants has been largely forgotten, and their irritability, unsociable behaviours, unemployability, lack of skills or education reduces their status and influence in their own families and communities.<sup>2</sup> Ex-combatants themselves characterised the posture of society as 'wishing us away'<sup>2(p.21)</sup> The author urged that society acknowledge histories of ex-combatants and seek to understand how these histories impact on their efforts to reconcile their militarised identities with their re-integration into a democratic society. Mogapi also emphasized the need for a multifaceted plan for re-integration including psychological support (individual and group therapy), ceremonies to recognise and honour ex-combatants, awareness campaigns, strengthening of support systems, and promotion of mutual self-help groups.<sup>19</sup>

In an unpublished master's dissertation in 2003, Moorcroft studied the levels of well-being (a combination of degree of living to one's best potential and one's level of happiness) and sense of coherence (a measure of the ability to cope with stressors) in a sample of Special Forces soldiers. He documented levels of well-being and sense of coherence in his sample.<sup>25</sup> The study found that these members of an elite corps had high levels of well-being and sense of coherence, higher than

civilian populations in the Witwatersrand area. This study is an example of bias in terms of what question the researcher chose not to ask: although combat stress reaction and PTSD are mentioned in his literature review and discussion, there was no measure for either PTSD or combat stress in the study. He does, however mention "negative experiences" in his respondents which include: negative intrapersonal self-assessment such as overconfidence, egocentricity, lack of recognition, feeling of failure, fear and pain; loss of fellow soldiers in battle and being away from loved ones; inadequate leadership in terms of incompetence, lack of support and autocratic style, injuries such as being shot and changes to the organisation with the change in government.

In 1989, Sandler wrote on Post-Traumatic Stress Disorder in conscripts who served in the townships.<sup>26</sup> She itemises the themes in the soldiers' experiences: anger, violence, depersonalising the enemy, a state of "moral inversion" and a sense of loss, meaninglessness and pessimism about the future. She draws parallels between the experience of conscripts in the South African war and the war in Vietnam. Baines (2008) and Marx (2007) also make this link in reviews of academic history, sociology literature, as well as popular literature.<sup>49,50</sup> Therefore, in the Border War context it is particularly illuminating and relevant to explore the extensive literature available on the Vietnam War.

## **2.4 PTSD prevalence in the international literature: The Vietnam War**

This literature reflects the long-lasting, even lifelong nature of PTSD.

### **2.4.1 The National Vietnam Veterans Readjustment Study (NVVRS)**

This was a nationwide study commissioned by the US congress and reached a representative sample of 1200 veterans. PTSD was assessed by triangulation of three rating scales: the Mississippi Combat-Related PTSD (M-PTSD) scale, The Structured Clinical Interview (SCID) PTSD diagnosis and the PTSD module of the Minnesota Multiphasic Personality Inventory (MMPI).<sup>27</sup> The study found a lifetime PTSD prevalence of 30.1% and current prevalence of 15.2% in 1988. The response rate for Vietnam veterans was 83%, 14 to 28 years after the war. These

figures have been disputed citing recall bias and exaggeration of trauma symptoms to gain disability and pension grants and other factors. However, when Dohrenwend et al. reviewed the NVVRS data in 2006, they confirmed that there was little evidence of falsification and an even stronger dose-response relationship emerged between combat exposure and PTSD.<sup>28</sup>

#### **2.4.2 The Veterans Experience Study (VES)**

This was also conducted in 1988 by the United States Centers for Disease Control (CDC).<sup>29</sup> The study compared Vietnam veterans and Vietnam Era veterans in a sample of 4462 veterans. This study used a version of a module of the Diagnostic Interview Schedule (DIS). However, the number of factors in the instrument used was decreased by half, thus reducing its sensitivity. In addition, although the protocol included the administration of the MMPI to all respondents the results of this instrument were not published. Unsurprisingly, this study found much lower prevalence figures of 2.2% for current PTSD and a lifetime PTSD prevalence rate of 14.7%.<sup>30</sup>

Other reasons for the lower figures for both lifetime prevalence and current prevalence in the VES study include the employment of closed questions administered by lay interviewers (as opposed to clinical interviews by trained clinicians), the exclusion of non-combat PTSD in the VES, and finally, the time period cut-off for current PTSD (taken as present in the six months prior to the interview in the NVVRS study and present in the one month prior to the interview in the VES).

#### **2.4.3 Meta-analyses of the NVVRS and VES**

Dohrenwend et al. in 2006 validated combat exposure rates based on the veterans's recall against both military records and newspaper reports of the time. They adjusted the lifetime war-related PTSD level down to 18.7% and the current PTSD level to 9.1%. This downward adjustment was due to the inclusion of PTSD related to trauma occurring *after* the Vietnam War in the initial algorithm of the NVVRS report.<sup>28(p981)</sup>

Thompson, Gottesman and Zalewski in a 2006 article used the data from both the NVVRS and the VES and using an equally-applied set of criteria, derived current prevalence estimates for combat-

related PTSD of 12.2% and 15.8% for the VES and NVVRS, respectively.<sup>31</sup> This analysis therefore found a figure closer to the original findings of the NVVRS, and six times the figure published by the VES.

#### **2.4.4 The Project TALENT study**

In this study 1,500 men had been studied as ninth graders (in 1960) and then again 11 years after high school (in 1974) as part of a larger research effort known as Project TALENT. In early 1981, 7 years after the end of the Vietnam era and more than a decade after the veterans' military service, when the men in this cohort were approximately 36 years of age, they were again surveyed.<sup>32</sup> The study derived its own PTSD measuring instrument with a reported coefficient  $\alpha$  reliability of .84. The response rate was reported to be 81%. Incidence of PTSD was 27% in the group with high combat exposure, 19% in the Vietnam-veteran group taken as a whole, and 12% in the control (non-combat) group. These figures accord well with the original findings of the NVVRS.

#### **2.4.5 Hawaiian Vietnam Veterans Readjustment Study (HVVR)**

This was another congressionally-mandated study of 530 respondents in Hawaii reported on by Friedman et al.<sup>33</sup> and reviewed in 2003 by Schnurr, Lunney and Sengupta.<sup>34</sup> The psychometric instrument used was the Structured Clinical Interview for the DSM-III-R. The response rate was 69%. Of the 530 participants, 30.6% had a lifetime diagnosis of PTSD, 14.7% had current full PTSD, and 7.7% had current partial PTSD. Lifetime prevalence varied among gender/ethnic groups. These figures therefore were close to those for the NVVRS study, although only one instrument was used, whereas the NVVRS used triangulation with the M-PTSD and the MMPI.

These studies were noteworthy in that random sampling was used of large cohorts of former Vietnam veterans, who were interviewed by academics in the case of the NVVRS, the HVVR and the TALENT studies, and lay researchers for a federal bureau in the case of the VES. The prevalence of PTSD was significant in all the studies. However, the VES study chose a design that could have been expected to under-report on the prevalence of PTSD, and then under-reported its prevalence figures, and chose to exclude its MMPI results. Yet, when the same criteria (cut-offs

and definitions) were applied to the VES study results by academics, the figures for prevalence were very close.<sup>31</sup>

## **2.5 PTSD prevalence in other international literature**

### **2.5.1 Gulf War**

The National Health Survey of Gulf War Era Veterans and Their Families was a survey of 15 817 veterans of the Gulf War of 1991 who were sampled by the US Department of Veterans Affairs in 1995. The survey utilized a postal questionnaire which had a response rate of 70%. The most important factor associated with participation was the ability to contact the veterans. Those who were un-contactable were younger, unmarried, non-white, lower rank veterans. Using the data from this cohort, Kang et al. in 2003 found a current PTSD prevalence of 12.1% using the PTSD Checklist (PCL).<sup>35</sup>

The Iowa Persian Gulf Study Group study was a CDC-conducted health assessment at the request of Senator Harkin of Iowa. This cross-sectional telephone interview study of 4886 subjects, with a response rate of 76% showed a PTSD prevalence of 1.9%.<sup>36</sup> However, the researchers developed their own study instrument for which they sourced some questions from the PCL, but they did not use the whole instrument. This is likely to have biased their results since they omitted key factors in the 17-item DSM formulation of PTSD, and this could be the reason that they found such a low prevalence. It is also possible that respondents have less protection in terms of anonymity with a telephonic interview data collection design.

### **2.5.2 Iraqi War: US Department of Defence**

There are several studies emanating from the Walter Reed Army Institute of Research that reported on the Iraq conflict:

The Hoge et al. study of 2004 using the 17-item PCL, reported that PTSD was significantly higher after duty in Iraq (12.2% to 19.9%), than after duty in Afghanistan (11.2%).<sup>37</sup> This was directly

related to the level of combat exposure to which soldiers were exposed in the two battle arenas. The respondents in this study were all combat-exposed.

Hoge et al.(2006) performed another study of 303 905 Army soldiers and Marines on their return from deployments in Afghanistan, Iraq and the Middle East, and former Yugoslavia using the Post Deployment Health Assessment (PDHA).<sup>38</sup> This study used a four item screen for PTSD developed by the National Center for PTSD for primary care settings, the Primary Care-PTSD screen (PC-PTSD). The four questions covered re-experiencing trauma, numbing and avoidance, and hyperarousal. A respondent who endorsed any 2 of the 4 questions was considered to be at risk for PTSD. In addition, the PDHA includes 4 questions regarding suicide, interpersonal relationships, and interest in receiving care. Those who endorsed any of the following were also considered to be at increased risk of a mental health problem: (1) expressing interest in receiving help for a stress, emotional, alcohol, or family problem or had sought or intended to seek counselling for a mental health problem, (2) reporting thoughts that they would be better off dead or hurting themselves in some way, (3) reporting thoughts or concerns about conflicts with close friends or family, and (4) feeling that they might hurt or lose control with another person. The PDHA does not include screening for anxiety disorders other than PTSD. Even with use of such a basic screening instrument, this study found 4.8% to 9.8% of the population to be at risk for PTSD.

Milliken et al. reported in 2007 on 88 235 US soldiers returning from Iraq who completed both a Post-Deployment Health Assessment (PDHA) and a Post-Deployment Health Re-Assessment (PDHRA) with a median of 6 months between the 2 assessments.<sup>39</sup> Even with such a basic screening instrument they, too, found that 9.1% of active servicemen and 14.3% of reservists or National Guard members, who participated in the Iraq War, assessed between 2005 and 2006 had symptoms of PTSD. When depression, suicidality and substance abuse were also assessed, the prevalence went up to 20% and 42% respectively. These figures accord well with the NVVRS study.

### **2.5.3 Iraqi War: King's College Military Health Research Study**

Several papers have been generated from a prospective cohort study on both regular and reserve members of the armed forces in the United Kingdom (UK). The initial sampling was of a group of 10 272 soldiers on their return from Operation Iraqi Freedom. This represented a response rate of 58.7%. Later studies used the same group of soldiers.

Hotopf et al. in a 2006 article reporting on the King's College Military Health Research (KCMHR) study reported PTSD levels of 4.0%.<sup>40</sup> The instrument used was the PCL-C, a civilian checklist, the same used in the 2004 Hoge study quoted above. In their discussion they suggest that the low prevalence rate for PTSD in their study may be a reflection of the fact that: first, a high proportion of the respondents in their sample were deployed combat support or combat services support roles and so were not exposed to combat; second, US personnel sampled in the Hoge et al. studies were younger, of lower rank, with more reservists; and third, in the UK sample 66% had had combat experience prior to their Iraq deployment, compared to 10% of the US personnel. (It was suggested that more experience of military stressors might increase resilience to these stressors).

Iverson et al. in a 2009 study approached only respondents from the earlier cohort who scored  $\geq 20$  on the General Health Questionnaire (GHQ) or  $\geq 50$  on the PCL. They used a telephone interview design and random sampling of the cohort reported on in the Hotopf et al. study which had a response rate of 59%. Their reported response rate was 76%, which implies a corrected response rate of 45%. The instruments used were the Patient Health Questionnaire (a screen giving a continuous score for depression and somatisation and a categorical score for major depressive illness, other depressive illness, panic disorder, generalised anxiety disorder, somatoform disorder, and alcohol abuse) together with the 4-item Primary Care PTSD scale. They therefore used an interview-based instrument rather than a self-report instrument. The study showed a PTSD prevalence of 4.8% for regulars (career soldiers) and 6.1% for reservists.<sup>41</sup>

There is a difference between the prevalence rates for PTSD between the studies conducted in the USA and in the UK. The USA reported rates are higher than those in the UK. There are two issues

which stand out in the reports of these studies: First, the institute conducting the research in the UK, the KCMHR appears more embedded in the military structures: (researchers have military ranks of major and above), while the researchers at the Walter Reid Institute and the Veterans Affairs institutes in the USA studies do not appear to hold military rank. It could well be that respondents feel less free to record responses indicative of emotional problems before officers of senior rank. Second, neither the Hotopf et al. study nor the Iverson et al. studies appear to have guaranteed the anonymity of respondents. For the Hotopf et al. study eligible personnel were assembled and asked to complete the questionnaire. Those who did not wish to participate could leave at any time. and senior personnel at the units were directly emailed by the Ministry of Defence requesting their assistance with the distribution of questionnaires and in locating highly mobile personnel.<sup>40(p.1733)</sup> It is difficult to ensure the anonymity of responses under these circumstances and this may have biased PTSD prevalence rates downwards. Respondents for the Iverson study were approached telephonically.

## **2.5.4 Israel**

### **2.5.4.1 The Yom Kippur War 1973**

In 1991 Solomon et al. compared a cohort of ex-Prisoners of War with a control group of 184 ex-combatants from the 1973 Yom Kippur War. This study was therefore performed 18 years after the war. They found a 14% prevalence of diagnosable PTSD at some time in the past. This study had a 72% response rate and utilized the PTSD Inventory.<sup>42</sup> In 2007, Solomon and Dekel reported on a longitudinal follow-up study of the same cohort, this time with a focus on post traumatic growth.<sup>43</sup> They achieved a response rate of 74% of the former cohort. At this point, 34 years after the war, they reported a prevalence rate of 4.39% in the veteran control group, a decline of 10%. The instrument used for both studies was a self-report scale, the PTSD Inventory (PTSD-I).

### **2.5.4.2 Lebanon War 1982**

In a 2006 article, Solomon and Mikulincer reported on a 20 year follow-up of a longitudinal study of 131 veterans who had shown combat stress reaction compared with 83 veterans of the same war who had not had combat stress reaction.<sup>44</sup> This study showed a prevalence rate for PTSD of

14.5% in the control group, which is similar to the levels reported from the study on the veterans of the Yom Kippur War of 1973. Levels of PTSD were measured using the PTSD inventory. This study reviewed measurements of PTSD and distress at year one, two, and three after the Lebanon War and compared these results with the same measurements twenty years after the same war. The response rate to the first three measurements was 70%, but to the 20 year measurement the response rate came down to 30%. This could suggest that the current research could have been expected to have an equally low response rate as it was conducted 22 - 34 years after the end of the war. The trajectories of both groups in Solomon and Mikulincer's study showed a trend for improvement over the first three years with a relapse almost to the immediate post-war levels of PTSD at 20 years.

### **2.5.5 Former Yugoslavia**

Kozarić-Kovačević et al. in a 2005 study of Croatian Army soldiers compared 680 veterans attending a clinic with an established diagnosis of PTSD, with 289 veterans matched for combat experience still on active service.<sup>45</sup> They reported a 4.0% prevalence of PTSD in soldiers still on active service, while in the group with established PTSD 15% of war veterans had current chronic PTSD, 45% had PTSD with one or more comorbid diagnoses: alcohol dependence (25%), major depressive disorders (23%), psychotic disorders with PTSD in 17% of war veterans and major depressive disorder with psychotic features for 15%. This study used a combination of the Structured Clinical Interview (SCID) and the Watson PTSD questionnaire for chronic PTSD. The interview was conducted by two psychiatrists. In this study, again, a clinician conducted interview may have showed a lower level of PTSD in the control group of soldiers than a self-report instrument would have shown. There are no details given regarding the sampling technique and the design of the study did not ensure anonymity of responses. There is no response rate recorded. However, this study is of particular interest since it examines the phenomenon of comorbid psychiatric diagnoses in detail.

## **2.5.6 African conflicts**

### **2.5.6.1 Rwanda**

A study conducted by Seedat, Le Roux and Stein on South African National Defence Force soldiers on their return from a peace-keeping mission in Rwanda in 2003 showed a prevalence rate of 26% for PTSD in these troops.<sup>46</sup> This study used the CAPS 1, modified for use as a self-report measure. The average age of the respondents in this study was 27 years. The response rate was 100%, all 187 personnel who had reported to their unit headquarters for duty on the day of the study. They had been notified that participation was voluntary, but none chose to decline to participate. There has to be some question as to whether respondents in this study really had the option to decline to participate. However, this study took care to ensure anonymity of responses, by separating the collection of consent forms and completed questionnaires. In this study, a clinician conducted interview instrument returned a relatively high PTSD prevalence, close to the NVVRS study findings.

### **2.5.6.2 Nigeria**

Okulate and Jones (2006) conducted a study on 1136 Nigerian soldiers involved in peace-keeping missions in Sierra-Leone and Liberia, who were admitted to an army hospital in Lagos.<sup>47</sup> They used the PCL, a self-report scale and found a 22% prevalence rate for PTSD in their sample.

The study is biased by the fact that 32% of respondents in this study did not fill in the PTSD section of the questionnaire. The actual response rate is unclear as there is also no mention of the number of soldiers approached for the purposes of the study who declined to participate.

### **2.5.6.3 Uganda**

In Uganda a cross-sectional study of 2,875 individuals who had fought in the Lord's Resistance Army (LRA) was performed in 2008 by Pham, Vinck and Stover.<sup>48</sup> Respondents were selected in terms of a multistage stratified cluster sampling design conducted in 8 districts of northern Uganda. The convenience sampling design precluded any measure of response rate. A self-report instrument, the PTSD Checklist for civilians (PCL-C) was used to determine the presence of PTSD.

The relatively high cut-off score of 44 was used. This study reported a PTSD prevalence rate of 56%. The comparatively high level of PTSD in this population may have been linked to the reduced resilience and increased vulnerability of a child population and to the fact that these respondents had all been abducted and forced to serve in the LRA.

Another study on child soldiers in the LRA by Derluyn et al. used another self-report instrument in common use - the Impact of Events Scale-Revised (IES-R). They did not report on a prevalence rate but found a mean score of 53 in a sample of 71 former child soldiers which implies that at least 50% of respondents had PTSD.<sup>49</sup> This sample was a convenience sample where respondents were sought via a radio appeal. Again this sample was of a more vulnerable grouping.

#### **2.5.7 Sri Lanka**

A study on 20 former Sri Lankan child soldiers all recruited before the age of 18 years and living in exile in Norway showed a mean score on the IES-R of 43. This suggests that 50% of this population have PTSD.<sup>50</sup> Convenience sampling with a 100% response rate was reported for this study, but there was no possibility of achieving a representative sample. This study is of interest since it used the same psychometric instrument, and showed a PTSD level in this sample which is much greater than the reported prevalence in the NVVRS, the VES and the later Gulf and Iraqi wars.

### **2.6 Observations on variable prevalence of PTSD**

It is clear that the literature reflects a marked variation in the levels of both lifetime and current PTSD in veteran populations. To a large extent this variation is linked to the instrument used for identifying cases and the differences in the study populations. Instruments with scoring systems that closely approximate the DSM-IV-R of 1994, (including the IES-R, PCL-C, the MMPI, the SCID, PTSD-I and the MPTSD scales) are regarded as the most reflective of levels of PTSD. Scales such as the PC-PTSD and the PTSD module of the DIS underreport the prevalence of PTSD.<sup>28,(p.981)</sup> Most of the studies of PTSD in ex-combatants look at samples of patients at

psychiatric clinics. The notable exceptions are the NVVRS and the VES. There may be a tendency for studies funded by the military to show low levels of PTSD, while an intermediate level of PTSD is shown in studies funded by government institutions and a higher level when academic institutions conduct the research. It appears that clinician administered scales for PTSD may tend to return a lower prevalence figure (4% in the King's College Military Research Study,<sup>40</sup> the Israeli study by Solomon and Dekel,<sup>43</sup> and the Yugoslavian study by Kozarić-Kovačević et al.<sup>45</sup>), although this trend was reversed in the study by Seedat, Le Roux and Stein using the CAPS which returned a prevalence of 26%.<sup>46</sup>

## **2.7 Rating scales for PTSD**

According to Foa and Meadows (1997)<sup>51</sup> and Brewin (2005)<sup>52</sup> there are a number of measures and rating scales used in the assessment of PTSD. They have different strengths and weaknesses and although an exhaustive description of these is beyond the scope of this report, key instruments are summarised in the following sections.

### **2.7.1 Clinician administered scales**

In terms of clinician administered interviews the following instruments are in common use:

The Clinician-Administered PTSD Scale (CAPS) produces a diagnosis and severity measure of PTSD. It has been modified twice over ten years, the current version in 1994. Internal consistency  $\alpha$  coefficients range from .73 to .85 for the three symptom clusters (avoidance, hyper arousal and re-experiencing). Regarding convergent validity, the CAPS correlated strongly with the M-PTSD (.70). Its administration takes about 45–60 minutes. It is available from the National Centre for PTSD in the USA. The CAPS is the only interview-based instrument querying both symptom frequency and intensity. In the current literature this is regarded as the gold standard against which other tests are ranked.

The Structured Clinical Interview (SCID) for PTSD is widely used and is the benchmark for diagnostic assessment, and it was used in the NSVVR study. However, it has no indicators of symptom severity, and cannot be used to detect changes in symptom severity following treatment.

The PTSD Interview (PTSD-I) has good psychometric properties. According to Watson et al. (1991), it demonstrated an internal consistency of .92, test-retest reliability total score  $r = .95$ , diagnostic agreement 87%. Against the DIS sensitivity .89, specificity .94.<sup>53</sup>

The Structured Interview for PTSD (SI-PTSD) also has good psychometric properties.

The Trauma Symptom Inventory (TSI) is available only from Psychology Assessment Resources. It expands the Trauma Symptom Checklist to a 100-item instrument with ten subscales which tap anxiety, depression, anger, PTSD symptoms, sexual concerns/behavior, and dissociation. Internal correlation coefficient Cronbach  $\alpha$  is greater than .80 for all ten sub-scales.<sup>54</sup> It correlates well with other PTSD scales.

The Diagnostic Interview Schedule (DIS), currently updated for the DSM-IV is a structured diagnostic interview designed to be administered by experienced lay interviewers without clinical training. The PTSD module has good sensitivity and specificity.

### **2.7.2 Self report scales**

Self-report measures are attractive for research purposes because of their accessibility and ease of administration, which make it possible to reach a wider sample base, although their degree of observer bias remains controversial. Scales in common use are:

The Impact of Event Scale – Revised (IES-R). There is an extensive literature on this scale and its predecessor the Impact of Event Scale (IES).<sup>55-56</sup> It has performed well in multiple cultures and settings. The scale was originally scored only for avoidance and intrusion measures for PTSD.

Internal consistency and test retest statistics are included in the next section (p24). The revised scale (the IES-R) includes items to measure hyper arousal, improving its power to detect PTSD.

The Mississippi Combat Related PTSD (M-PTSD) Scale. The scale has an internal consistency coefficient  $\alpha$  of .94; test retest reliability of .97 ( $p < .0001$ ). Positive predictive value 80%, negative predictive value 97%.<sup>57</sup> A cutoff score of 107 was selected for PTSD by Keane et al.<sup>58</sup> This was one of the instruments used in the NSVVR study, and is the only self-report scale that has been validated in a South African military sample. As noted above, it was validated for use in a South African context in an unpublished master's dissertation study performed in 1989 by Hodgson.<sup>24</sup>

The PTSD Diagnostic Scale (PDS) was developed as a self-report instrument that would provide information about each of the 17 *DSM-IV* symptoms. The PDS is available only from Psychological Assessment Resources. The PDS is the only measure assessing all PTSD criteria, including functional impairment. This scale has been found to be variable across populations, settings and research methods. Reliability was supported by a Cronbach's  $\alpha$  of .92 and a test-retest reliability coefficient of .83. Validity was supported by strong correlations ( $r = 0.73-0.79$ ) between the PDS and measures of depression and anxiety.<sup>59</sup>

The PTSD Checklist or PCL shows a correlation coefficient of .929 with the CAPS and correlation of .700 or better for symptoms.<sup>60,61</sup>

PTSD Inventory. Solomon and Dekel (2007) found that internal consistency among the 17 items for measurements at two different times in the cohorts studied was high (Cronbach  $\alpha = .87$  for 1991 and .95 for 2003 total score and ranged from .70 to .82 for the subscales).<sup>43</sup> The scale was also found to have high convergent validity when compared with diagnoses based on structured clinical interviews.<sup>42</sup>

Watson's PTSD questionnaire is based on the DSM-R.<sup>53</sup> Psychometric characteristics are internal consistency Cronbach  $\alpha$  .92 and test-retest reliability  $r = 0.95$ .

The Minnesota Multiphasic Personality Inventory (MMPI) yields detailed information on personality (Axis II) and self-capacity difficulties frequently associated with complex post-traumatic outcomes and includes PTSD scales. It is considered less than optimal in terms of sensitivity and specificity.<sup>62</sup>

The PTSD Symptom Scale Interview (PSS-I) includes a combined frequency/severity rating of each of the 17 PTSD symptoms and thus yields both a diagnosis and a continuous severity rating. The PSS-I has a short administration time: about 15–20 minutes to administer. It has been used mostly with rape victims.

Various factors influence the choice of instrument. The time taken to administer the instrument is a factor. The clinician administered scales; especially the CAPS and the TSI, take 40 to 60 minutes to administer. Some of instruments are listed in book form and are not readily available. Many scales, such as the PSS-I have been tested and validated in civilian populations only. The convergence and comparability of civilian tested scales with military populations is not fully established, although the civilian version of the PCL, PCL-C has been used numerous studies on military populations in the literature.<sup>35,37</sup> There are three PCL versions in use: the PCL-C (civilian version), the PCL-M (military version) and the PCL-S (trauma-specific version). According to McDonald and Calhoun the PCL-M overestimates the levels of PTSD by 100% and for this reason the PCL-C is preferred.<sup>60</sup>

### **2.7.3 Impact of Event Scale - Revised**

The Impact of Event Scale developed by Horowitz, Wilner and Alvarez as revised by Weiss and Marmar<sup>56</sup> was used as the instrument to determine PTSD in this present study. This self-report scale has been tested and used in other studies<sup>63-65</sup>. It shows good correlation with other established scales such as the General Health Questionnaire (GHQ-28)<sup>66</sup>, and with the Clinician Administered PTSD scale (CAPS). This gives a good representation of the prevalence in the study group of PTSD symptoms even if the diagnosis has not been formally made. It takes less than ten

minutes to complete. According to an internet survey by Elhai et al. in 2005 it was used by more than 30% of clinicians who are members of the International Society for Traumatic Stress Studies (ISTSS).<sup>67</sup> This was the highest use of a self-report scale by clinicians in the study. It has the advantage that its format suits a study looking at an event or events that took place between twenty-two and thirty-five years ago. The IES-R has been tested in both military and civilian populations.

According to the 2003 study by Creamer, Bell and Failla; the IES-R total score was highly correlated with the PTSD Checklist (PCL) with a total score .84,  $p < 0.001$ .<sup>68</sup> The highest overall diagnostic power (.88) was achieved with a cut-off of 1.5 (equivalent to a total score of 33) on the IES-R, providing a sensitivity of .91, a specificity of .82, positive predictive power of .90, and negative predictive power of .84.

The IES-R has been cross-culturally validated and is appropriate for use in a context where the traumatizing event took place many years ago. It does not ask for any return to a narrative of the traumatic event and this was important in the context of this study.

## **2.8 PTSD as a primary care issue**

### **2.8.1 PTSD and primary care**

Early work in the nineteenth century by both Janet and Freud into the condition they called hysteria marked the first serious investigation of the condition later called PTSD. This was followed by a hiatus in research until World War I when Dr W. H. Rivers presented a paper to the Royal Society of Medicine in 1918, a paper later published in *The Lancet*.<sup>69</sup> This paper and the research it recorded represented a giant step in insight into, and de-stigmatisation of, post-traumatic stress disorder (PTSD). After World War II, Appel and Beebe<sup>70</sup>, Kardiner<sup>71</sup>, and Grinker<sup>72</sup>, published new insights and theories which built extensively on his work and established the condition in the scientific literature. It was only after the Vietnam War, however, that literature on this subject

burgeoned. This literature parallels the improvement in attitudes of society to sufferers from PTSD and reflected an improvement in their access to appropriate medical and psychological care.

Literature suggests that a high percentage of sufferers go undiagnosed and untreated by primary health care practitioners, and that primary care practitioners should improve their awareness of PTSD.<sup>73,74</sup> Lange and Romanov have observed that with a disease prevalence of this order it is necessary that primary care practitioners are primed to recognize the condition of PTSD, particularly when its presentation can be mistaken for other anxiety disorders, depression, somatization disorder, or substance abuse disorder.<sup>14,75</sup> Herman argues that: “The persistent anxiety, phobias, and panic of survivors are not the same as ordinary anxiety disorders. The somatic symptoms of survivors are not the same as ordinary psychosomatic disorders. Their depression is not the same as ordinary depression. And the degradation of their identity and relational life is not the same as ordinary personality disorder”<sup>8(p.118)</sup> This implies that a failure to understand the complex interaction of PTSD with other anxiety disorders and even with certain personality disorders will adversely affect both the accuracy of diagnosis, and the treatment outcomes. This insight was reflected in the work of psychiatrists working with PTSD in former combatants in Croatia,<sup>45</sup> veterans attending a PTSD clinic in Australia,<sup>76</sup> veterans attending a Veterans Association clinic in Boston,<sup>77</sup> and a master’s study by Naggan on 5853 members of the South African National Defence Force involved in peace-keeping duties in Africa.<sup>78</sup> The National Vietnam Veterans Readjustment Study (NVVRS) also found a significant presence of antisocial personality disorder (the only personality disorder tested for) in respondents who scored positive for PTSD.<sup>27(p.96)</sup> Herman advocated a new diagnosis for those who have prolonged and repeated incidents of trauma over months to years. This is Complex Post Traumatic Stress Disorder.<sup>8</sup>

### **2.8.2 Prevalence studies in primary care settings**

The following five studies on populations attending primary care facilities are reviewed as they point to the relevance of PTSD to a family practice study. These are general population studies and the traumatic event or events include, but are not confined to, combat related trauma.<sup>79, 73, 74,</sup>

Taubman Ben Ari and his co-workers found in a national sample of primary care practice attendees in Israel that while 9% of patients presenting in a primary care setting had PTSD, only 2% of their patients suffering from PTSD had been identified as such.<sup>79</sup>

A 2007 study by Liebschutz et al. reporting on an urban primary care Boston sample in an academic setting showed a current PTSD prevalence of 23% and a lifetime PTSD level of 33%.<sup>73</sup> Only half of the 23% current PTSD sufferers were known to have PTSD prior to the study, indicating that the diagnosis is often missed in a primary care setting. That study also found the prevalence of PTSD to be higher in participants who presented with chronic pain, major depression, anxiety disorders and Irritable Bowel Syndrome (IBS).

In a 1999 study, Samson et al. interviewed 7444 patients attending a Health Maintenance Organisation (HMO) in Denver, Colorado. They found that 38.6 % of their patients were suffering from PTSD.<sup>74</sup> Over 70% of these patients were attending primary care facilities rather than psychological services as their first port of call.

Stein et al. found a prevalence figure for combined PTSD and partial PTSD of 11.8%, in their San Diego study in 1997. The Departments of Psychiatry, and of Family Medicine and Preventive Health of the University of California conducted this study jointly, and the study population size was 5368 respondents. It is also noteworthy that more than half of eligible respondents approached for the study declined to participate. This low response rate may indicate the sensitivity of the topic and the unwillingness of people to participate in PTSD-related research.<sup>80</sup>

The longitudinal Primary Care Anxiety Project in Boston, Massachusetts, reported on by Zlotnick et al. in 2004, found that in a follow-up sub-sample (n=84) of identified PTSD sufferers the on-going prevalence rate for PTSD was 30% over the first two years of the study. This high prevalence was noted even with on-going treatment. This suggests that either there needs to be more work done

on understanding what treatments are effective, or seeking different and more effective treatments or else the disease is, by its very nature, a chronic one.<sup>81</sup>

Foa et al. have suggested a template for determining the value of studies of PTSD.<sup>51</sup> They have argued that a “gold standard” should be applied to all studies evaluating treatment, and this has influenced the subsequent literature profoundly. They suggested that clearly-defined target symptoms as well as reliable and valid measures are used, that evaluators are blinded, that assessor training be manualized to make all assessments as uniform as possible, that replicable, specific treatment programs are evaluated in the studies with unbiased assignment to treatment cohorts, and, finally, evaluation of treatment adherence be standard.

### **2.8.3 Clinical and biochemical correlates in primary care**

The following section presents evidence in seven large trials of war veterans that examine the chronic burden of disease linked to PTSD. These include substance abuse disorders, depression, irritable bowel syndrome; social problems such as marital discord and parenting problems; and adverse outcomes such as suicide. These conditions, problems and outcomes may well present first to the primary care physician, with whom the responsibility to discern the role of trauma in the causation and course of these health problems and outcomes lies.

Koenen et al. in a 2007 study based on data from the NVVRS cohort noted that there is a strong correlation in the literature between combat exposure and the increased utilization of medical services, marital difficulties, difficulties with child rearing, and substance abuse disorders including smoking, and alcohol and drug dependency.<sup>82</sup>

Mortality figures are also significant: an Australian study of Vietnam Era veterans reported by Fett et al. in 1987 showed a 1.2 times increase in mortality in national servicemen who served in Vietnam versus national servicemen who served only in Australia.<sup>83</sup>

In 2004, Boscarino found that certain diseases are particularly associated with PTSD: the Vietnam veteran population were documented to have a 50-150% increased risk of cardiovascular disease, autoimmune diseases (especially rheumatoid arthritis and hypothyroidism), and psoriasis. In this population reduced levels of cortisol were often found.<sup>84</sup>

In a later study Boscarino, in 2006, found a 2.4 times higher mortality from multiple causes among Vietnam veterans with PTSD compared to veterans without PTSD.<sup>85</sup> Boscarino postulated that the glucocorticoid system is down-regulated resulting in elevations of immune inflammatory activities. One causal pathway often cited involves alterations in the hypothalamo-pituitary stress axis concurrent with sympathetic-adrenomedullary axis activation. These biological errors of homeostasis together with the efforts to relieve adverse psychological effects by self-medication with alcohol and other drugs could contribute to the pathophysiologic process<sup>85(p.255)</sup>

Norman et al. in a 2006 study of 680 respondents attending primary care clinics in Seattle and Southern California found PTSD to be associated with diabetes and arthritis.<sup>86</sup> They used a telephonic version of the Composite International Diagnostic Interview (CIDI-auto) administered by lay interviewers.<sup>85(p.255)</sup>

Hearst et al.<sup>87</sup> noted in a 1986 study that there was an increased mortality from road accidents in Vietnam War veterans in the USA.

Finally, Hendin and Haas in their 1990 study of combat veterans with PTSD found that 19% had made suicide attempts, and 15% were constantly preoccupied with suicide.<sup>88</sup>

There is, therefore, ample support in the literature for the relevance of a study on PTSD in a primary care setting. There is a body of evidence that shows that many conditions commonly seen in a primary care setting may either be caused by, or a consequence of, or part of the symptom complex of PTSD. There is also convincing evidence for a significant prevalence of PTSD demonstrated in a primary care setting in a number of different countries. The researcher has

found no studies on PTSD in primary care in South Africa. This may be a reflection of the missed opportunities that exist in the identification of cases and the need for planning and implementation of interventions in a primary care setting in South Africa.

## **2.9 Coping strategies: concepts and measures**

The second aim of this current research report is to measure coping strategies in former national servicemen. The inter-related concepts of hardiness, coping and resilience in the literature, together with measuring instruments in common use are presented.

### **2.9.1 Hardiness**

The unpublished master's dissertation study by Moorcroft (mentioned above p10) focused on special-forces ex-combatants who had been involved in military operations in Angola during the Border War.<sup>25</sup> He presented two resilience-related measures, wellbeing and sense of coherence, in this grouping. He observed that intensive training, elite status and pride in their corps play a large role in preserving their sense of coherence. This matches research in the USA and United Kingdom (UK) that has shown differential levels of PTSD in reservists versus career soldiers in Iraq.<sup>39,41</sup> However, Moorcroft's sample did show lower levels of sense of coherence in respondents who had had longer exposure to the combat zone.

Antonovsky defined the *sense of coherence* as "a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that:

- (1) The stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable (comprehensibility);
  - (2) The resources are available to one to meet the demands posed by these stimuli (manageability); and
  - (3) These demands are challenges, worthy of investment and engagement (meaningfulness).
- Meaningfulness holds the highest place in the hierarchy, because it is through meaningfulness that

motivation is mediated. In turn, high manageability is contingent upon comprehensibility, which is thus next in the hierarchy<sup>89(p.725)</sup>

Various hardiness scales have been reported in the literature. They measure items called commitment, control and challenge. However, there is a confusing multiplicity of hardiness scales and much controversy as to what they are measuring.<sup>90-91</sup> This makes them more difficult to use for assessment in this sample.

### **2.9.2 Coping**

Pearlin and Schooler in a study of 2 300 households in Chicago in 1978 itemised coping strategies in the areas designated marital, parenting and occupational and economic stress.<sup>92</sup> They compared the efficacy of these strategies in terms of the reduction in outcomes of stress and anxiety. They classed coping strategies into:

- Social responses such as the interpersonal support network;
- Psychological responses such as innate personality characteristics of self-esteem, self-denigration and self-mastery, and default habits such as denial, escapism and avoidance; and,
- Specific coping resources in the form of behaviours, cognitions and resources.

The first phase of the study by Pearlin and Schooler employed qualitative interviews with 100 respondents to arrive at nine types of coping strategy in the specific coping resource arena: self-reliance vs. advice seeking; controlled reflectiveness vs. emotional discharge; positive comparisons; negotiation; self-assertiveness vs. passive forbearance; selective ignoring; exercise of potency vs. helpless resignation; optimistic faith; substitution of rewards and devaluation of money. These variables were later scored and subjected to regression analysis to determine their association. Although this study had a very different sample population and was looking at very different stressors it had strengths in that it used large numbers for the qualitative analysis of coping strategies, and it employed regression analysis to compare the efficacy of the different coping strategies.

The landmark work in this field, a work by Lazarus and Folkman published in 1984 conceptualizes coping strategies as the “constantly changing cognitive or behavioral efforts to manage the specific external and/or internal demands (and conflicts between them) that are appraised as taxing or exceeding the resources of the person”<sup>93(p.112)</sup>

There are beneficial strategies such as emotional support and ineffective or counterproductive strategies such as rumination. Strategies may be active such as pursuing physical health, or passive, such as giving up control. Coping strategies can mediate the outcomes of stressful events. They suggest that there are three types of coping strategy:

- Problem-solving: or efforts to change the difficult situation;
- Reappraisal: efforts to alter or reduce the perceived threat; and,
- Emotion-focused: Stress reduction actions or efforts to deal with the symptoms of stress.

Folkman and Moskowitz (2004) suggested that problem-focused strategies are more adaptive in controllable situations, whereas emotion-focused strategies are more adaptive in uncontrollable situations.<sup>94</sup>

Folkman and Lazarus developed a Ways of Coping-Revised (WOC-R) instrument which has been used extensively.<sup>95</sup> The eight items measured by this instrument were summarised by Hyer et al. (1996) in their 1996 study of 110 Vietnam veterans admitted to a special PTSD facility as: *confrontative coping* (confrontational and impulsive, action-oriented efforts to alter the situation), *distancing* (efforts to cognitively detach oneself from the event), *self-control* (efforts to control one's feelings and actions), *seeking social support* (efforts to obtain informational, tangible, and emotional support from others), *accepting responsibility* (acknowledgment of personal responsibility and self-criticism), *escape-avoidance* (wishful thinking and efforts to avoid or escape the problem), *planful problem-solving* (deliberate problem-focused efforts to alter the situation), and *positive reappraisal* (efforts to find positive meaning in the event)<sup>96(p.300)</sup> An important common finding has been that avoidance and withdrawal coping strategies are associated with greater

stress. However, Hyer et al. concluded that the WOC-R was not suited to measure coping strategies in Vietnam veterans.<sup>96</sup>

Littleton et al. (2007) also summarise another conceptualisation of coping as being comprised of approach strategies and avoidance strategies. Approach strategies are focused on the stressor itself or one's reaction to the stressor, and are generally regarded as more adaptive. Avoidance strategies on the other hand, are focused on avoiding the stressor or one's reaction to it; for example, withdrawing from others, denying that the stressor exists, and disengaging from one's thoughts and feelings regarding the stressor. Although avoidance strategies may reduce distress in the short-term, they are conceptualized as being maladaptive if an individual persists on relying on them.<sup>97</sup>

Carver, Scheier and Weintraub (1989) developed a self-report scale of coping (COPE scale) in a study of undergraduates trying to cope with a stressful episode in their lives. Coping strategies are ranked into fifteen four-item scales; five scales to measure problem-focused coping; five scales measure aspects of emotion-focused coping; and five scales measure more counter-productive responses.<sup>98</sup>

Solomon and Berger (2005) modified the COPE in a study of volunteer body handlers. They omitted several items, reducing the number of factors from 13 to 9. Factor analysis with Varimax rotation yielded Cronbach  $\alpha$  as follows: seeking social support ( $\alpha = .89$ ), humour ( $\alpha = .88$ ), denial ( $\alpha = .64$ ), acceptance ( $\alpha = .58$ ), taking action ( $\alpha = .71$ ), faith ( $\alpha = .72$ ), escapism ( $\alpha = .55$ ), positive thinking ( $\alpha = .65$ ), and monitoring ( $\alpha = .71$ ).<sup>99</sup> A French study of 1834 students showed a Cronbach  $\alpha$  of .606 for the French adaptation,<sup>100</sup> an Estonian adaptation showed a Cronbach  $\alpha$  ranging from .49 to .95 for the variables used,<sup>101</sup> a study in a Portuguese population of 651 people attending a health clinic showed a Cronbach  $\alpha$  variation of .77 to .80,<sup>102</sup> and a Russian study on 523 subjects showed high reliability indices.<sup>103</sup>

A later version of COPE (the brief COPE) has 12 two item scales, with a Cronbach  $\alpha$  for the items ranging from .50 to .90.<sup>104</sup>

### 2.9.3 Resilience

A parallel and closely related construct is that of Resilience. The original literature developed in the disciplines of psychology and psychiatry and was centred on children and adolescents and factors that promoted good outcomes from adverse events in childhood.<sup>105</sup> Later literature from nursing and medicine has adopted the concept in fields such as cancer survivors, post-traumatic stress disorder, cardiac stent survivors, and aging to name a few.<sup>106</sup> A prolific researcher in this field, the child psychiatrist, Michael Rutter, defined resilience in 1985 as 'the ability to bounce back from a negative experience, or even significant adversity, through flexible adaptation to the ever-changing demands of life'.<sup>107</sup> While Rutter originally conceived of resilience as a personality trait, in a more recent paper, he stressed that he had come to consider resilience to be a process or mechanism.<sup>108</sup> He suggested that the mediating mechanism for resilience might lie in personal agency or coping strategies: what individuals actually do in order to deal with stressful events. Researchers such as Luthar, Cicchetti and Becker view it as a 'dynamic process encompassing positive adaptation within the context of significant adversity'.<sup>109(p.543)</sup> The main antecedent to resilience is thus adversity. According to Earvolino-Ramirez: 'The significant outcomes or consequences of resilience are effective coping, mastery, and positive adaptation'.<sup>110(p.78)</sup> This further emphasizes the congruence of the concepts of resilience and coping strategies.

This conceptualization of the ability to cope as a dynamic process can be utilized by taking self-assessment measures of resilience and using them serially as a clinical measure of treatment response. One such measure is the Connor-Davidson Resilience scale (CD-RISC), which is a measure of stress coping ability.<sup>111</sup>

The CD-RISC scale draws on previous work on resilience by Rutter<sup>107</sup> and as well as on hardiness by Kobasa.<sup>112</sup> In a 2003 study Connor and Davidson developed and validated an instrument to measure resilience in the CD-RISC scale. They found that 'improvement in CD-RISC score was

noted in proportion to overall clinical global improvement, with greatest increase noted in subjects with the highest global improvement and deterioration in CD-RISC score in those with minimal or no global improvement<sup>111(p.81)</sup> The CD-RISC scale thus distinguishes between those with greater and lesser resilience. The scale consists of 25 statements. There are five subscales: personal competence, social competence, family coherence, social support and personal structure. The Cronbach  $\alpha$  for the full scale was .89, there is good internal consistency and test re-test reliability (intraclass correlation coefficient .89), and good convergent validity with the Kobasa hardiness measure (Pearson  $r = -0.76$ ,  $p < .001$ ).

Use of the scale has demonstrated that resilience can be modified and made to improve with treatment, and greater improvement in the CD-RISC scale corresponds to greater global improvement levels.<sup>111</sup> The scale had a particular advantage for this study as it is shorter to administer (25 questions rather than the 60 questions in the COPE scale) and it was designed for use with PTSD. It also has the advantage of being practical and useful in a clinical setting, whereas the concepts of hardiness and coping are subject to considerable confusion as to the significance and meaning of their scores.<sup>43,113,114</sup>

Connor and Davidson identified three applications of the scale:

- To explore the biology of resilience, investigating factors such as the transformation of low baseline catecholaminergic activity into high catecholamine production, increased tissue-specific response (e.g., glucose levels) and an attenuated cortisol response, (all measures associated with positive resilience);
- To explore, identify and nurture resilience characteristics in a clinical setting; and,
- To investigate adaptive and maladaptive strategies for coping with stress and also to assist in screening individuals for high-risk, high-stress activities or occupations.

## **2.10 Conclusion: Literature review**

This chapter presented a literature review on the relevance of PTSD in family practice. Literature on the South African Border War has been reviewed together with literature on the Vietnam War and other international conflicts with a particular emphasis on prevalence rates and some factors which influence these rates. Psychometric instruments for screening for PTSD as well as those for assessing coping have been reviewed and an argument presented in favor of the use of the CD-RISC for assessing coping strategies.

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## **CHAPTER 3**

### **RESEARCH METHODS**

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This chapter identifies the aims and objectives of the study. The design of the study and the method of data collection are outlined. The population, the sampling process used, and the final sample are included. The measurements and measuring tools are explained. The pilot study is described. The process of statistical analysis is addressed. Ethical considerations are named. Limitations in the design of the study are stated.

### **3.1 Aims and Objectives**

The aims of the study were to:

Determine the prevalence of Post-Traumatic Stress Disorder among former national servicemen who matriculated from Parktown Boys' High School in Johannesburg between 1975 and 1988, and,

Assess the level of resilience in this population group as an index of coping.

The objectives were to:

Describe the demographic characteristics of former national servicemen who matriculated from Parktown Boys' High School in Johannesburg between 1975 and 1988;

Determine the proportion of the sample that meet the criteria for PTSD using the Impact of Event Scale – Revised;

Assess the level of resilience of the former national servicemen in the sample using the Connor-Davidson Resilience Scale; and,

Examine potential associations between demographic variables, PTSD and Resilience.

### **3.2 Design**

The study has a cross-sectional analytical design, using convenience sampling augmented by snowball and cluster sampling. The analysis utilised questions which sought demographic data such as age at intake into the defence force, current occupation, current education, religious

affiliation, alcohol and drug use, medical and psychological interventions (if any), exposure to significant traumatic events after national service, and a composite score for combat exposure using the nature and deployment of the unit in the SADF they served in, their exposure to fire fights and to acts of war against civilians.

An anonymous web-based questionnaire was set up on the Wits University Health Sciences faculty web-site. This was set up using free web-based software called LimeSurvey accessible on: <http://docs.limesurvey.org/tiki-index.php?page=Question+types>. Invitations to participate containing a link to the questionnaire were sent via email and via the postal services to potential volunteers.

### **3.3 Study population**

The population group from which the sample was drawn was the former learners from Parktown Boys High School who matriculated from 1975 to 1988 (the years of the Border War) – a total of 1527 men. This school (described above on p5) was chosen because it was a government school that served a broad cross section of mainly English-speaking, white South African boys, who came from both white-collar and blue-collar backgrounds.

The criteria for inclusion were attendance at Parktown Boys' High School and being drafted for national service.

### **3.4 Sampling process**

Ideally, based on the inclusion criteria, addresses for a high percentage of the 1527 matriculants from the school between 1975 and 1988 should have been accessed. This proved to be unrealistic. The headmaster of Parktown Boys' High School, and the Parktown Foundation (which arranges all contact between the school and its Old Boy network), were approached for permission and support for the study to be conducted on former matriculants from the school. They were sympathetic to the study and the Parktown Foundation advised in writing that it would make the database of addresses available.

However, the Parktown Foundation despite the initial written agreement to provide addresses of the total of 1527 matriculants, reneged on their agreement to do so when the proposal was approved by the Wits higher degrees committee and the ethics committee. While they had no objection to the study proceeding, they cited concerns that the issue might be unpopular with their constituency. This was a setback. As a compromise, the administrator of the Parktown Foundation did agree to advertise the study in the school electronic magazine and provide the link to the study there. This was set up on 21 December 2009. Six old boys responded.

Alternative sources for the addresses of former learners had to be sought. The school library was accessed, with the help of the headmaster, and a list of matriculants was obtained from the school magazines. Searches were made via telephone directories. The researcher attended class reunions for his cohort of students, the class of 1977, and contrived an invitation to the reunion for the matric class of 1979 as well, and the list of traceable classmates from the 1977 and 1979 classes were obtained from the conveners of the class reunions. No other lists for other class reunions could be found. Some addresses were found via searches of the telephone directory and the internet.

In addition, former learners were found on network sites such as Facebook and SAReunited and it was planned to send invitations to a list of 364 former learners found on these two sites. Only four more respondents were reached by these means before the social network software preventing advertising on these networks shut down these attempts. It is only possible to send multiple messages to designated 'friends' The internet social network option therefore was not accessible for the purposes of research.

By the 23rd March 2010, a total of 109 invitations had been sent out, including 14 hard copy letters where there was only a postal address available. Eight of the email addresses were returned as invalid. Only one of the postal invitations was acknowledged.

Snowball sampling was used where all respondents reached were requested to forward the invitation to participate to any graduates from Parktown Boys' High School between 1975 and 1988 with whom they were still in contact. A total of 9 further respondents were reached in this way.

Twenty eight respondents filled out the second questionnaire asking to be informed of the results of the study. Then, a second invitation was sent out to those who had not responded on the 12<sup>th</sup> June. At this point there were 54 responses. The survey was closed off on 31<sup>st</sup> July 2010 with 90 responses.

Six volunteers made contact by email with the researcher to obtain additional information about the aims of the study. Four of these subsequently filled out the questionnaire. Two responded to a second invitation to participate by expressing an intention to do so, but citing time constraints as a difficulty in filling out the questionnaire. One former national serviceman approached the researcher to say that he declined to participate on the grounds that he had decided to handle his bad memories by never thinking or talking about his National Service.

### **3.5 Sample**

The sample consisted of a self-selected convenience and snowball sample of potential volunteers drawn from a population of 1527 former high school learners at Parktown Boys' High School. There were 90 responses. Thirty six responses were incomplete and therefore were excluded from the study. Eight respondents did not do national service. The final sample was 54 individuals, who matriculated between 1975 and 1988, and completed the questionnaire.

The data collection phase began on 21 December 2009 when the Parktown Foundation sent out its newsletter, and ended on 31<sup>st</sup> July 2010. Data collection thus took place over a period of seven months.

### 3.6 Measurements

A questionnaire was compiled for the purpose of this study. The first section contained an invitation to participate with a brief introduction to the survey (p87). The second section sought specific demographic data (p89). The third section comprised the Impact of Event Scale – Revised (IES-R) (p92) and fourth, the Connor Davidson Resilience Scale CD-RISC (p93). The survey questionnaire ended with a link to a check-out section (in effect a separate second questionnaire) seeking a return email address, for those respondents who wished to receive feedback on the results.

In order to improve the response rate, the length of the questionnaire needed to be kept to a minimum. Demographic variables sought in the questionnaire were: home language, marital status, number, (if any) of children, religious affiliation, occupation, level of education, age at intake into the army, date of intake into the army, and postings and army rank during national service.

The questionnaire items for combat exposure were developed for the questionnaire. Questionnaire items used to arrive at these categories were: training units, military postings, rank, exposure to combat, exposure to fire fights, operational incursions into Angola and acts of war against civilians. This data was used by the researcher to arrive at a composite unit of exposure to combat: 1 (Special Forces), 2 (Infantry), 3 (Artillery and Armour), 4 (minor field), 5 (non-field). The allocation was discussed with a former national serviceman who was not part of the study, and consensus on the categories reached.

The third part of the questionnaire consists of the IES-R (previously explained on p24). This is a 22-item self-report measure designed to assess self-reported subjective distress for any specific life event. The revised scale consists of 22 statements related to reactions to a particular traumatic event. The scale includes three subscales, intrusion (seven items, maximum score 28), avoidance (eight items, maximum score 32) and hyperarousal (seven items, maximum score 28). Thus the scale score ranges from 0 to 88.

The IES-R shows high internal consistency, with coefficient  $\alpha$  of .87 to .92 for intrusion, .84 to .85 for avoidance, and .79 to .90 for hyperarousal. Test-retest correlation coefficients ranged from .57 to .94 for intrusion, .51 to .89 for avoidance, and .59 to .92 for hyperarousal.<sup>68</sup>

The main strengths of this revised instrument are that it is short, easily administered and scored, and correlates well with the DSM-IV criteria for PTSD. In addition, it can be used serially to assess progress. The IES-R has been cross-culturally validated and has been translated into many languages including Spanish, French, Chinese, Japanese, and German. Its limitation is that it is a screening tool rather than a comprehensive test.

The fourth part of the questionnaire consists of the CD-RISC. As explained on p34, this scale consists of 25 statements. There are five subscales: personal competence, social competence, family coherence, social support and personal structure. The Cronbach  $\alpha$  for the full scale was .89, with good internal consistency and test re-test reliability (intraclass correlation coefficient .89), and good convergent validity with the Kobasa hardiness measure Pearson  $r = -.76, p < .001$ .<sup>111</sup>

### **3.7 Pilot Study**

A pilot study was conducted on six men who had matriculated at other South African high schools and done their national service during the Border War, and who agreed to pilot the survey and provide feedback on items that were ambiguous, irrelevant or poorly worded. In the process problems with the text of the link were ironed out, and many questions were re-edited. They also made suggestions regarding other questions that might help to assess this population group. One point raised was that the researcher's initial conception of the study had not included respondents who did their national service in the South African Police. The wording of the questionnaire was altered to include this group.

### 3.8 Statistical Analysis

The raw data were exported to a Microsoft Excel file format. This allowed it to be categorised and organised into a form that could be entered into the statistical analysis package used (STATA, version 11). String data (strings of words) were converted where appropriate to numerical data. A descriptive analysis reflected respondents'socio-demographics, looking at age at intake into the army, marital status, educational level and religious affiliation.

Because of the small sample size, the two scale scores (IES-R and CD-RISC) were concatenated into two and three categories respectively. The cut-off scores for the IES-R were based on established levels in the literature.

However, since Connor and Davidson in their original work on the development of their scale (the CD-RISC) did not assign cut-off values for PTSD, this study allocated cut-off scores on the basis of the following logic: Their paper delineating the development of the CD-RISC scale presented a mean and range for five groups:<sup>111</sup>

- General population (n=577, mean score 80.4, *sd* 12.8),
- Primary care (n=139, mean score 71.8, *sd* 18.4),
- Psychiatric outpatients (n=43, mean score 68.0, *sd* 15.3),
- Generalised Anxiety Disorder (n=242, mean 62.4, *sd* 10.7), and
- Two PTSD groups (n=22, n=22, means 47.8 and 52.8, *sds* 19.5 and 20.4).<sup>111</sup>

For the purpose of analysis in this study, a resilience score designated *Low* was set at 51 or less since this represents the mean for the two PTSD groups in the study, and is very close to two standard deviations (95% confidence level) below the mean for the category *general population* (a score of 48). The other categories were *impaired* at a score of 52 – 61 and *general population* at a score of 62 or more. The score of 62 is one standard deviation below the mean for the *general population* group.

The associations between these categories of PTSD and resilience (respectively) and the demographic variables (Level of Combat Exposure, Educational Level, Marital Status, Post-National Service Traumatic Experiences and Drug Use) were analysed using the non-parametric chi-square test. Non-parametric statistics were used because of the small sample size and because much of the data were categorical and not continuous. Also, Funk et al.(1987) suggest that regression analysis is more appropriate in dealing with the normal scatter of data because they enable the use of the full distribution of the base scores while controlling for the influence of other variables. Significance was set at  $p < .05$ .<sup>91</sup>

It became obvious that the five level combat exposure analysis did not fit the data, and the ranking was changed to three groups: group 1 (Special Forces plus minor field), group 2 (infantry, artillery and armour) and group 3 (non-field). This approximated better to the ranking of low, middle and high exposure to combat, as used by Fett et al.<sup>83</sup>

### **3.9 Ethical Considerations**

Clearance certificate number M091004, was obtained from the Ethics Committee of the University of the Witwatersrand to pursue this research. A copy of this clearance is included in Appendix C on p96.

The choice of psychometric instruments was dictated by the imperative to minimise any direct narrative, which might act as an imaginal exposure to remembered trauma, and hence reawaken PTSD in respondents. For this reason the rating scale IES-R was chosen as it has been designed to provide a self-reported measure of PTSD by focussing on outcomes that are linked to PTSD, rather than on any narrative of the trauma itself.

The psychometric instruments used were selected to minimise any need for on-going counselling. However, in the event of the research stirring up problems, respondents were referred to resources such as the Centre for the Study of Violence and Reconciliation in Johannesburg and the Trauma

Centre in Cape Town, as well as resources in other countries (see invitation letter in Appendix B p88). In addition respondents were given contact details for the researcher for any queries or issues they might have. A growing body of literature that suggests that:

The bulk of evidence indicates that extraordinary precautions are not warranted for trauma-related studies in general. Individuals who have experienced trauma or developed PTSD do not appear to constitute a vulnerable group in terms of either susceptibility to coercion or impaired decision-making. Although distress may be experienced during participation in traumatic stress studies, the overall cost-benefit balance seems favourable. Even when participants endorse unexpected upset during a study, most signify willingness to repeat the experience or otherwise indicate no regret about participation. And, finally, trauma-related investigations that have asked participants to rate study procedures in terms of the minimal risk standard find that it applies well<sup>115(p.600)</sup>

As previously mentioned, the web-based questionnaire format assures the anonymity of respondents and significantly reduces pressure on persons approached to fill out the questionnaire.

### **3.10 Limitations of research design**

Many researchers consider that self-report-based measures need to be treated with caution and should be followed up with clinician-administered interviews. Concerns around self-report scales center on response biases, misinterpretation, and contextual factors.<sup>60</sup> Results of self-report scales need to be confirmed by doing stratified, randomized sampling procedures and standardized diagnostic interviews.

This study examines responses to an event or events that occurred 22 to 34 years ago. Concerns have been raised in the literature that the IES-R has not been evaluated for an event or events that took place two to three decades in the past: Asukai et al. have suggested that there may be increased levels of false positives.<sup>116</sup> There may be recall bias in this setting. However, Dohrenwend et al. (2006) in an innovative study were able to validate the responses of Vietnam veterans in the NVVRS.<sup>28</sup> These responses were also provided after a gap of 14 to 20 years and

the self-report bias that had been the subject of numerous papers was not shown to exist in this cohort. The time lapse in this study between the traumatic event and assessment is comparable.

The levels of resilience measured in this study may be skewed in that the respondents who are coping with the trauma of combat exposure are able to engage with the issue and respond to the questionnaire, while those who are not coping may not have responded. This could yield a false assessment of the degree of resilience.

The study design presupposes that respondents have access to the Internet and the ability to use it. It is possible that a cohort of matriculants are living in conditions where by reason of health or income they are not able to participate in interactions with the world via the internet.

Another element of bias is the inclusion criterion of matriculant. This excludes old boys from Parktown Boys' High who dropped out of school. Lower educational level has been consistently implicated in studies into vulnerability to PTSD in combatants. National servicemen who had not matriculated at the date of their intake into the SADF would then be regarded as more at risk for PTSD during their national service.<sup>117, (p.47)</sup>

This study focuses on national servicemen, conscripted soldiers in the former South African Defence Force (SADF). It has not assessed a sizeable population of possible PTSD sufferers: the under-resourced former 'freedom-fighters' of the liberation forces: Umkhonto we Sizwe (MK), Azanian Peoples Organisation (AZAPO) and the Self Defence Units (SDU).

Another limitation concerns the omission of any inquiry into difficulties with parenting and its effects on the next generation. These difficulties have been noted by Rosenheck in a 1986 study of children of World War II veterans<sup>118</sup> and Rosenheck and Nathan in a 1985 study of Vietnam veterans.<sup>119</sup> These studies suggest that at least some of the children absorbed their parents' pain and that this transmitted trauma was carried out in psychological symptoms of their own; and

ultimately in their lives, in terms of choice of marital partners, lifestyles and careers. In this sample all of the respondents have children. Their competence at parenting has not been assessed.

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## CHAPTER 4

### RESULTS

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#### 4.1 Responses included in data analysis

Of the 109 invitations to participate in the study sent out, 90 replies were received. Twenty-eight questionnaires were incomplete, and 8 respondents did not do National Service, leaving usable data from 54 respondents.

#### 4.2: Demographics of respondents

##### 4.2.1 Year of Intake

The spread of respondents by year of intake is mostly even (see Figure 1), although the average respondents per year from 1985 onwards declined by almost half.

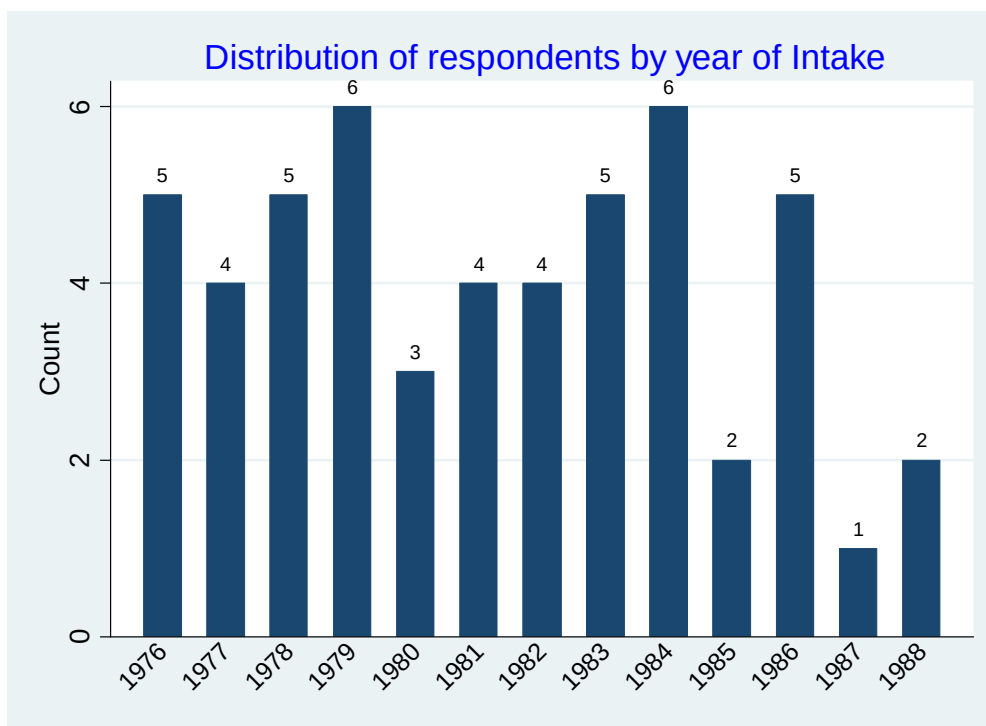


Figure 1. Year of intake

#### 4.2.2 Age of respondents at intake

The pie graph (Figure 2) shows at a glance that more than half of the respondents were in the age range 16 to 19 years, and the distribution is skewed with the peak at 19.14 years (Figure 3).

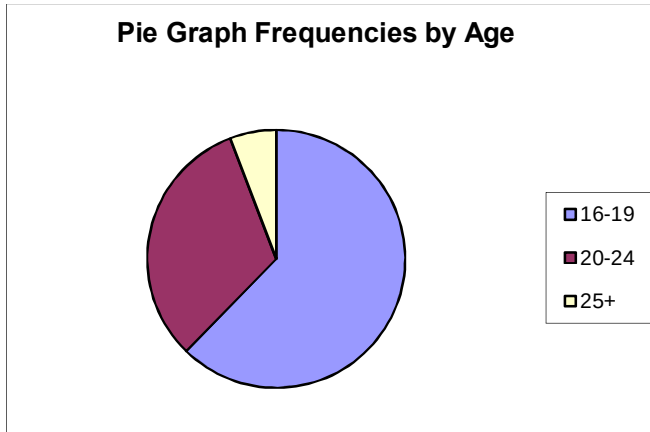


Figure 2. Pie graph representation of age at intake

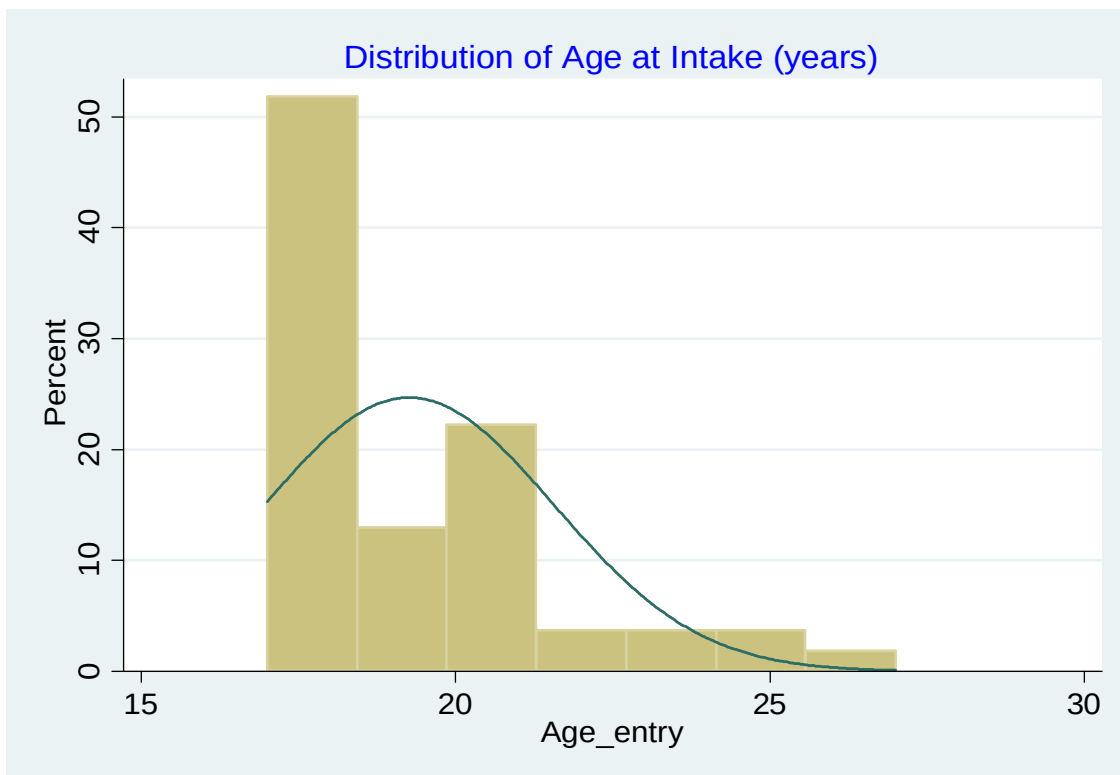


Figure 3. Distribution by age at intake

#### 4.2.3 Marital Status (current)

As shown in Figure 4 the majority (76%) of the respondents were married and 93% in a current relationship. The prevalence of divorce in this sample was 19%.

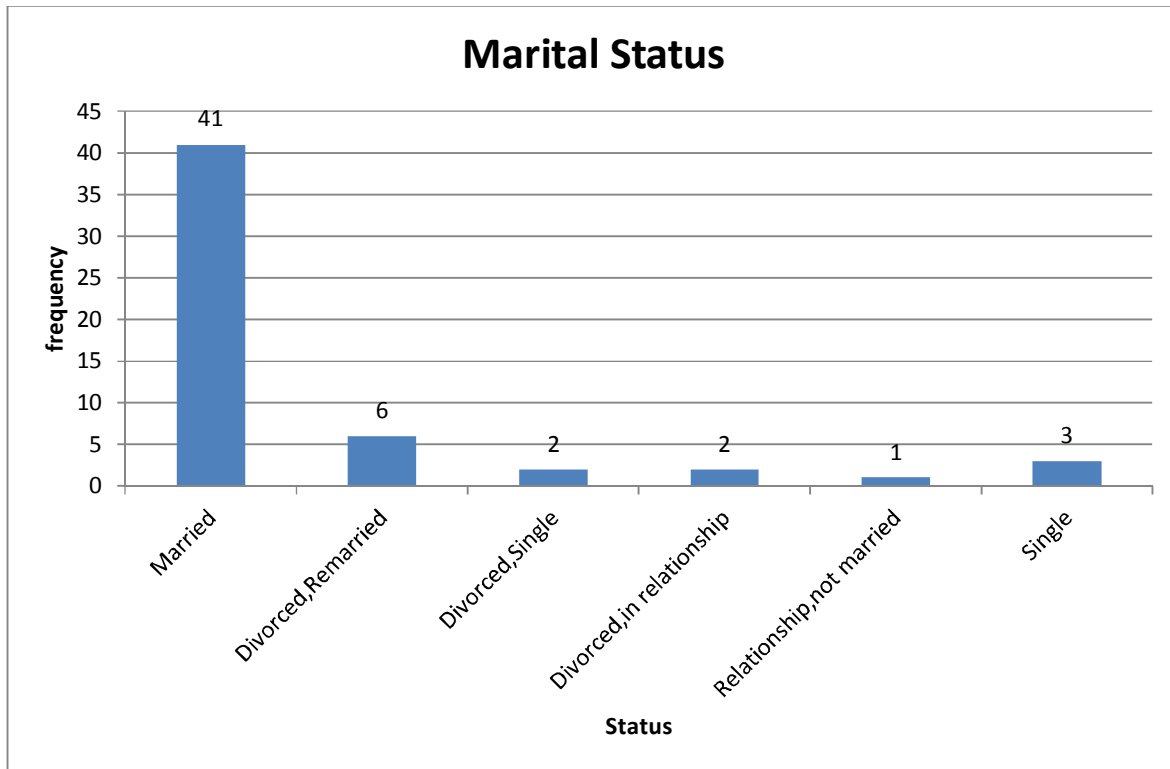


Figure 4. Marital status of respondents

#### 4.2.4 Number of children by respondents in the sample

All respondents had fathered children, the majority (46%) in this sample had three children, and 75% of the sample had three or more children (Figure 5).

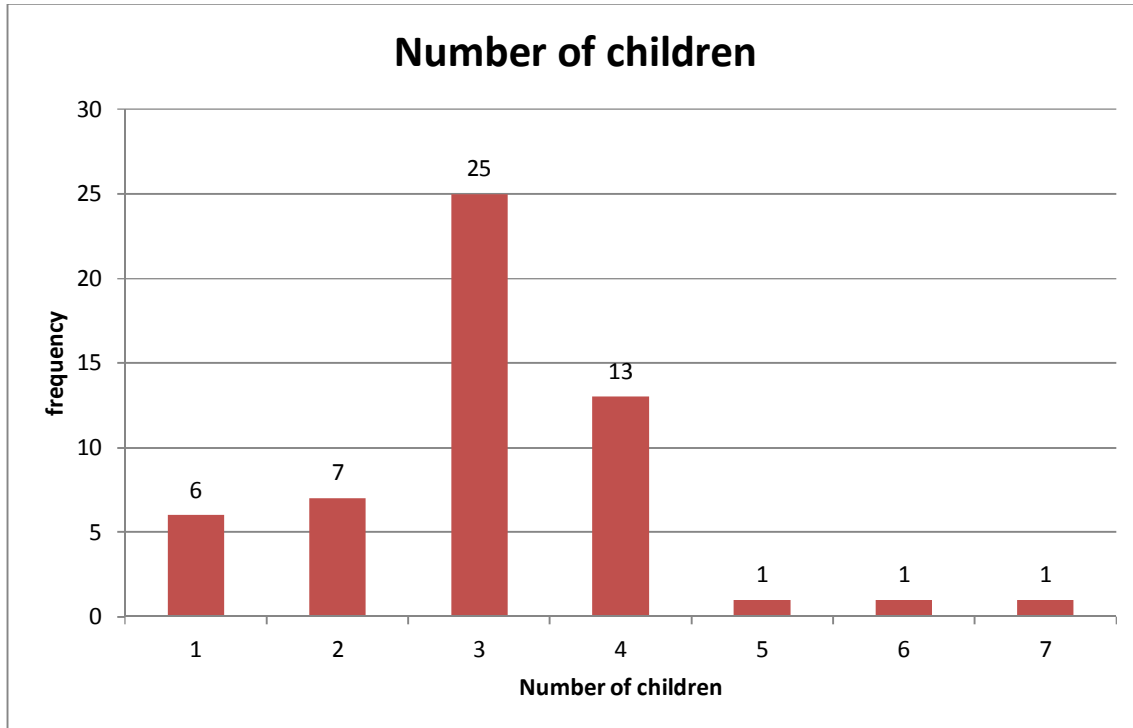


Figure 5. Number of children of respondents

#### 4.2.5 Religious Affiliation (Current)

The majority of the respondents (89%) acknowledged affiliation with a religion (Figure 6). The largest religious group in this sample was Anglican.

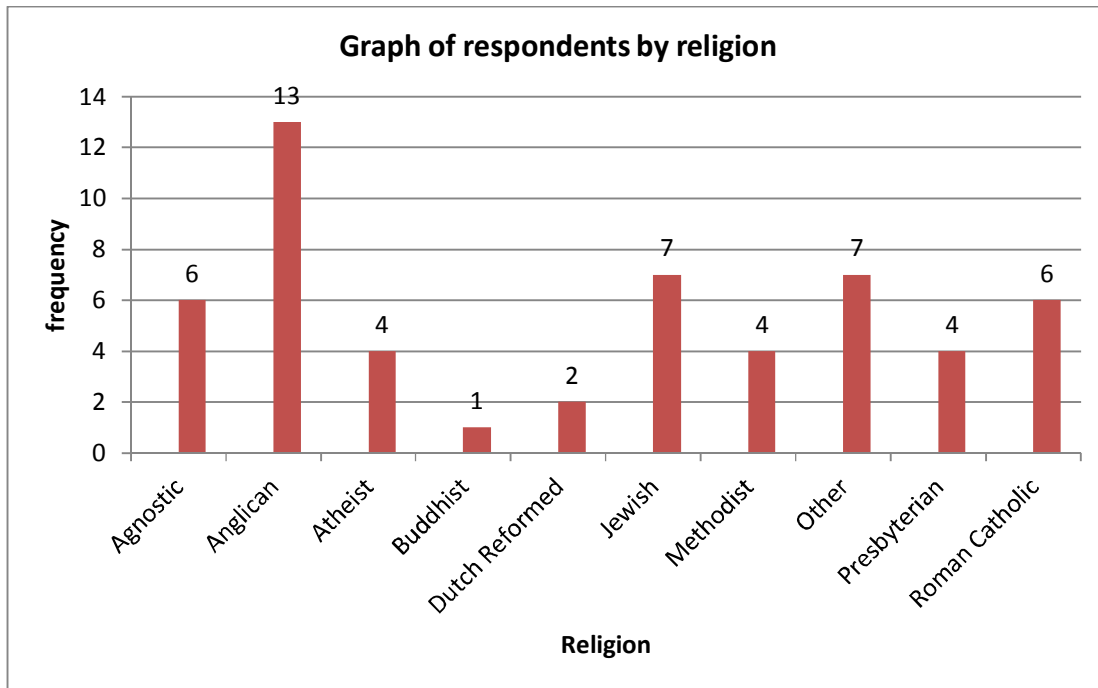


Figure 6. Religious affiliation (current) of respondents

#### 4.2.6 Language

The minority languages were Afrikaans and Greek, but 94% of the sample was English-speaking. (Table 1)

| Language  | frequency | percentage |
|-----------|-----------|------------|
| Afrikaans | 2         | 4          |
| English   | 51        | 94         |
| Greek     | 1         | 2          |
| Total     | 54        | 100        |

Table 1. Language of respondents

#### 4.2.7 Unit Clusters (Combat exposure grouping)

The spread of respondents by combat exposure grouping shows that the majority served in the infantry, artillery and armour group (Figure 7).

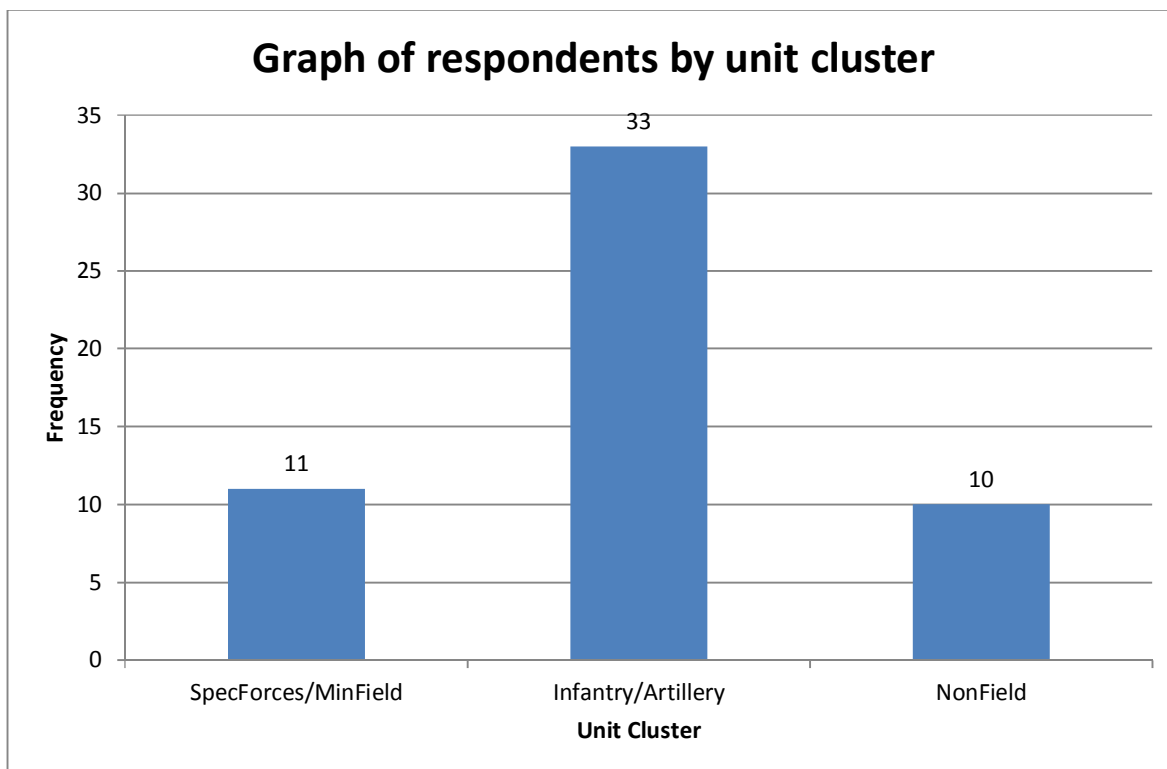


Figure 7. Bar graph representation by unit cluster

#### 4.2.8 Education (Current)

Table 2, showing frequency of educational level, also revealed a skewed pattern in the respondents. Most respondents reported having a tertiary level of education.

| Qualification     | Frequency | Percentage | Cumulative |
|-------------------|-----------|------------|------------|
| Matric            | 11        | 20.37      | 20.37      |
| Trade Certificate | 1         | 1.85       | 22.22      |
| Technical College | 8         | 14.81      | 37.03      |
| University Degree | 12        | 22.22      | 59.25      |
| Post Graduate     | 22        | 40.75      | 100        |
|                   |           |            |            |
| TOTAL             | 54        | 100.00     |            |

Table 2. Educational level (current)

#### 4.2.9 Psychological interventions in respondents

Two of the respondents (4%) recorded that they had had medical or psychological intervention during or immediately after their national service. Fourteen respondents (26%) had counselling at some point after their national service.

#### 4.2.10 Alcohol and drug use

In this study 6% of respondents had alcohol use at a problematic level and another 6% were imbibing toxic quantities of alcohol (Table 3). The question was not answered by 22% of respondents.

| Alcohol quantity<br>Units/day | frequency | percentage |
|-------------------------------|-----------|------------|
| unanswered                    | 12        | 22         |
| < one                         | 13        | 24         |
| 1 to 3                        | 23        | 42         |
| 4 to 6                        | 3         | 6          |
| 7 +                           | 3         | 6          |

**Table 3. Current alcohol use**

This question had a high level (65%) of non-response (Table 4). No respondents indicated drug use other than cannabis.

| Cannabis Use<br>(rate per week) | frequency | percentage |
|---------------------------------|-----------|------------|
| Not answered                    | 35        | 65         |
| Not at all                      | 12        | 22         |
| 1 time                          | 5         | 9          |
| 2 to 4 times                    | 1         | 2          |
| 5 or more times                 | 1         | 2          |
| Total                           | 54        | 100        |

**Table 4. Drug use**

#### 4.2.11 The Impact of Event Scale – Revised.

Table 5 reflects a current PTSD level of 33% in this population.

| IES-R score                  | Frequency | Percentage   |
|------------------------------|-----------|--------------|
| Normal range<br>(32 or less) | 36        | 66.67        |
| PTSD range<br>(33 or more)   | 18        | <b>33.33</b> |
| Total                        | 54        | 100          |

**Table 5. IES-R score results**

Figure 8 reflects a positively skewed distribution which shows a mean score of 23. The majority of this population does not score positive for PTSD.

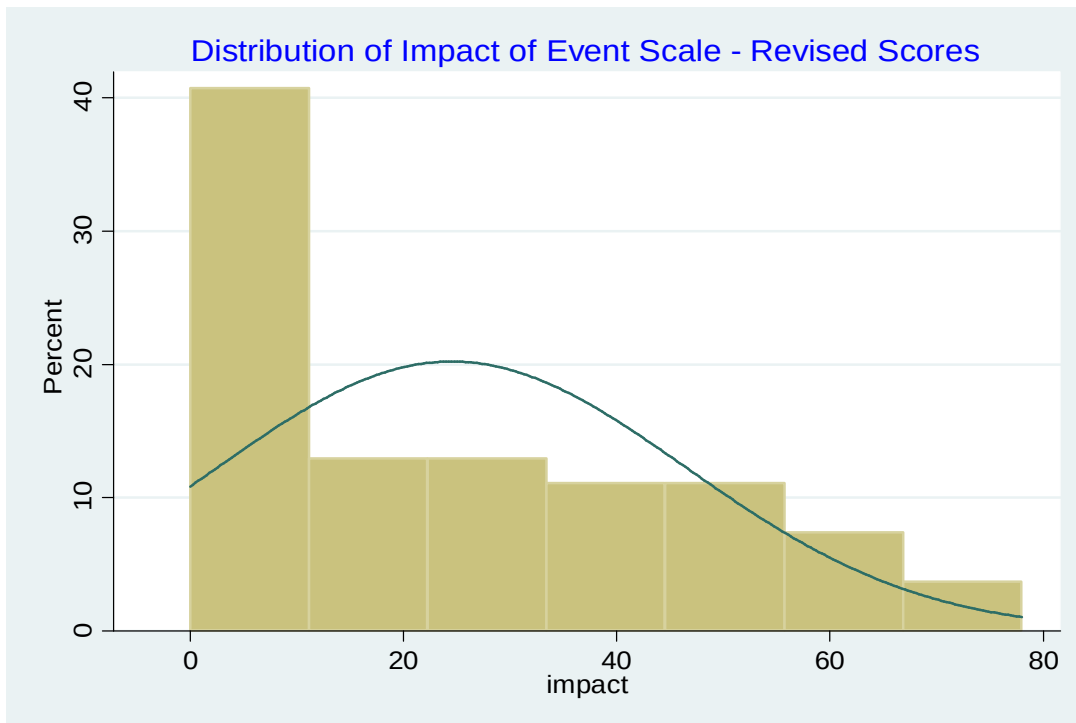


**Figure 8. Distribution of IES-R scores**

#### 4.2.12 The CD-RISC scores

The table of CD-RISC scores shows that only 5.56% of respondents had a resilience score in the range selected in this study for PTSD (Table 6).

| CD-RISC category  | Frequency | Percentage  |
|-------------------|-----------|-------------|
| Low (0-51)        | 3         | <b>5.56</b> |
| Impaired (52-66)  | 16        | 29.63       |
| General Pop (67+) | 35        | 64.81       |
| Total             | 54        | 100         |

**Table 6. CD-RISC scores**

The distribution in Figure 9 is also skewed, this time negatively, with the mean score over 70. This is in contrast to the distribution of the IES-R scores.

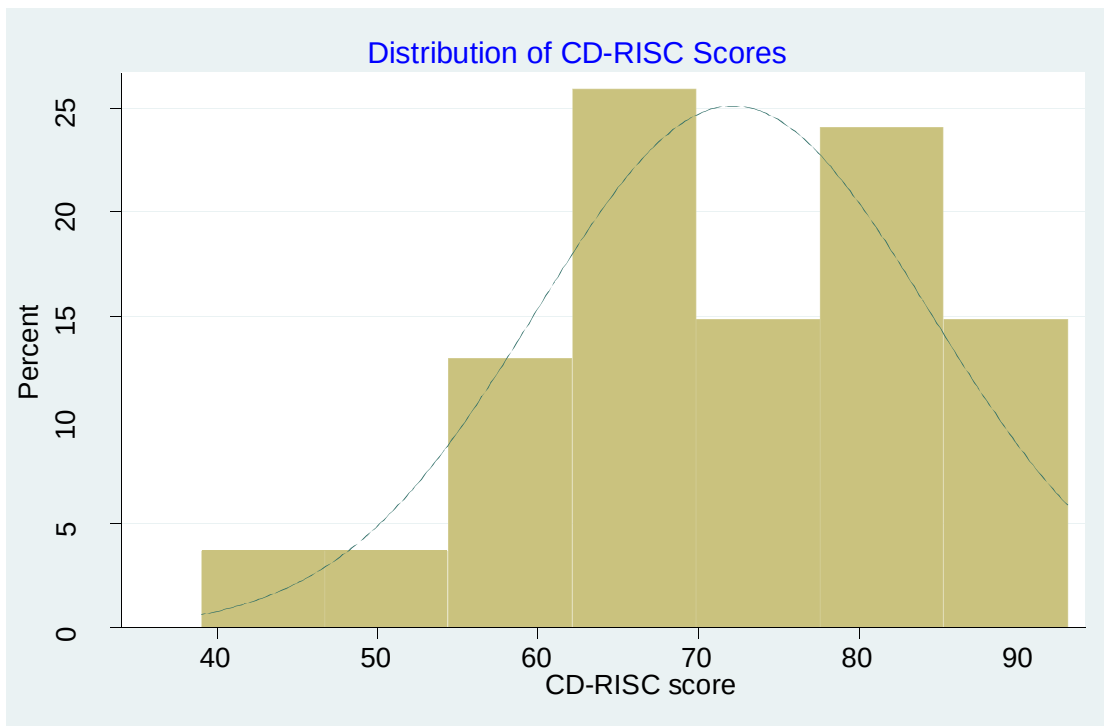


**Figure 9. Distribution of CD-RISC scores**

## 4.3 Comparative Analysis

### 4.3.1 Relationship between Current Cannabis Use and PTSD

The association of current cannabis smoking and PTSD was significant (Table 7), with Pearson  $\chi^2 = 9.7699$  ( $p = .044$ ).

| IES-R score category                                                                                                                        | Cannabis non-user | Cannabis user |
|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------|
| <b>Normal</b>                                                                                                                               | 9                 | 0             |
| % by row                                                                                                                                    | 81.82             | 0             |
| % by column                                                                                                                                 | 75.00             | 0             |
| % by cell                                                                                                                                   | 47.37             | 0             |
| <b>PTSD</b>                                                                                                                                 | 3                 | 1             |
| % by row                                                                                                                                    | 37.50             | 12.50         |
| % by column                                                                                                                                 | 25.00             | 100.00        |
| % by cell                                                                                                                                   | 15.79             | 5.26          |
| <b>Total</b>                                                                                                                                | 12                | 1             |
| % by row                                                                                                                                    | 63.16             | 5.26          |
| % by column                                                                                                                                 | 100.00            | 100.00        |
| % by cell                                                                                                                                   | 63.16             | 36.84         |
| Pearson $\chi^2 = 9.7699$ ( $p=.044$ )<br>Likelihood ratio $\chi^2 = 12.3679$ ( $p=.015$ )<br>Cramer's $V = .7171$<br>Fisher's Exact = .012 |                   |               |

**Table 7. Relationship between cannabis use and PTSD**

#### 4.3.2 Relationship between PTSD, Resilience and Combat Exposure

The next two tables show correlations between PTSD, Resilience and combat exposure using two analytic methods. First, a regression analysis of the data was conducted (table 8). There is an association between the PTSD score on the IES-R and combat exposure. 88.89% of those considered positive for PTSD were in the Infantry, Artillery and Armour Units (Group 2). This constitutes 48% of Group 2 and 33% of all responses. The Pearson  $\chi^2$  was significant at .012.

|                                                                                                                | <b>Group 1<br/>Special Forces<br/>&amp; Minor<br/>Field</b> | <b>Group 2<br/>Infantry,<br/>Artillery and<br/>Armour</b> | <b>Group 3<br/>Non-Field</b> | <b>Total</b> |
|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------|------------------------------|--------------|
| <b>Normal</b>                                                                                                  | 10                                                          | 17                                                        | 9                            | 36           |
| % by row                                                                                                       | 27.78                                                       | 47.22                                                     | 25.00                        | 100          |
| % by column                                                                                                    | 90.91                                                       | 51.52                                                     | 90.00                        | 66.67        |
| % by cell                                                                                                      | 18.52                                                       | 31.48                                                     | 16.67                        | 66.67        |
| <b>PTSD</b>                                                                                                    | 1                                                           | 16                                                        | 1                            | 18           |
| % by row                                                                                                       | 5.56                                                        | <b>88.89</b>                                              | 5.53                         | 100          |
| % by column                                                                                                    | 9.09                                                        | <b>48.48</b>                                              | 10.00                        | <b>33.33</b> |
| % by cell                                                                                                      | 1.85                                                        | 29.63                                                     | 1.85                         | 33.33        |
| <b>Total</b>                                                                                                   | 11                                                          | 33                                                        | 10                           | 54           |
|                                                                                                                | 20.37                                                       | 61.11                                                     | 18.52                        | 100          |
| Pearson $\chi^2$ = 8.7682 p = .012<br>Likelihood ratio $\chi^2$ = 9.8225 p = .007<br><br>Fisher's exact = .015 |                                                             |                                                           |                              |              |

**Table 8. Regression analysis of PTSD and Combat Exposure**

Second, (table 9), a logistic regression analysis was performed to compare the odds ratios for the association between Group 1 (special forces and minor field) and Groups 2 (infantry, artillery and armour) vs. Group 3 (nonfield) as the base variable. This comparison gives a sense of the observed dose-response relationship between Group 3 as the base group, and Groups 1 and 2, using allocated group and PTSD score on the IES-R as continuous variables. The results shows that those in Infantry, Artillery and Armour had 8 times greater odds of being positive for PTSD compared to those in the Non Field group and this was statistically significant ( $p = .054$ ); while those in the Special forces & Minor Field group had roughly the same (.9) odds, and the difference from the base group was not statistically significant.

| <b>Logistic regression</b><br>Number of observations = 54<br>LR ( $\chi^2$ ) = 9.82<br>Prob > $\chi^2$ = .0074<br>Log likelihood = -29.46053<br>Pseudo $R^2$ = .1429 |            |           |       |      |                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|-------|------|-------------------|
| Impact of Event Scale                                                                                                                                                | Odds Ratio | Std Error | z     | P> z | 95% conf interval |
| Infantry, Artillery & Armour                                                                                                                                         | 8.470588   | 9.40363   | 1.92  | .054 | .961505           |
| SpecForces/MinField                                                                                                                                                  | .9         | 1.338282  | -0.07 | .944 | .0488115          |

**Table 9. Logistic regression of PTSD and Combat Exposure**

The following table (Table 10) examines the relationship between resilience, as measured by the CD-RISC, and combat exposure. There is no significant association between the CD-RISC score and combat exposure ( $p > .05$ ).

|                                                                                                                                                | Group 1<br>Special Forces<br>And Minor<br>Field | Group 2<br>Infantry,<br>Artillery and<br>Armour | Group 3<br>Non-Field | Total  |
|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|----------------------|--------|
| <b>Low resilience range</b>                                                                                                                    | 1                                               | 2                                               | 0.00                 | 3      |
| % by row                                                                                                                                       | 33.33                                           | 66.67                                           | 0.00                 | 100.00 |
| % by column                                                                                                                                    | 9.09                                            | 6.06                                            | 0.00                 | 5.56   |
| % by cell                                                                                                                                      | 1.85                                            | 3.70                                            | 0.00                 | 5.56   |
| <b>Impaired resilience range</b>                                                                                                               | 2                                               | 11                                              | 3                    | 16     |
| % by row                                                                                                                                       | 12.50                                           | 68.75                                           | 18.75                | 100.00 |
| % by column                                                                                                                                    | 18.18                                           | 33.33                                           | 30.00                | 29.63  |
| % by cell                                                                                                                                      | 3.70                                            | 20.37                                           | 5.56                 | 29.63  |
| <b>General Population</b>                                                                                                                      | 8                                               | 20                                              | 7                    | 35     |
| % by row                                                                                                                                       | 22.86                                           | 57.14                                           | 20.00                | 100.00 |
| % by column                                                                                                                                    | 72.73                                           | 60.61                                           | 70.00                | 64.81  |
| % by cell                                                                                                                                      | 14.81                                           | 37.04                                           | 12.96                | 64.81  |
| Total                                                                                                                                          | 11                                              | 33                                              | 10                   | 54     |
|                                                                                                                                                | 20.37                                           | 61.11                                           | 18.52                | 100.00 |
| Pearson $\chi^2 = 1.6959$ ( $p = .791$ )<br>Likelihood ratio $\chi^2 = 2.2801$ ( $p = .684$ )<br>Cramer's $V = .1253$<br>Fisher's Exact = .845 |                                                 |                                                 |                      |        |

**Table 10. CD-RISC correlated with Combat Exposure**

#### 4.3.3 Relationship between cigarette smoking and PTSD

Fifty percent of respondents were cigarette smokers, but there was no association between being a smoker and PTSD ( $p=.19$ ), or smoking and combat exposure ( $p=.17$ ).

#### 4.3.4 Relationship between level of education and PTSD

There was no association between PTSD and level of education.

#### 4.3.5 Relationship between later traumatic events and PTSD

There was no association between traumatic events after National Service and PTSD on the Impact of Event Scale – Revised. There were 23 victims of armed robbery (42%), 14 victims of assault (25%), 1 had experienced a serious industrial accident (0.1%), 5 had experienced domestic

violence (9%), 8 had been victims or witnesses of a natural disaster (15%), 22 had been victims or witnesses of a serious vehicle accident (41%), and 10 had experienced other trauma (19%).

#### **4.3.6 Relationship between divorce and PTSD**

There was no significant association between divorce and PTSD, or between divorce and combat exposure in this study.

### **4.4 Internal consistency of the scales**

#### **4.4.1 Consistency IES – R**

The IES-R scale had a high level of interitem correlation (Table 11).

|                               |       |
|-------------------------------|-------|
| Average interitem correlation | .6054 |
| Number of items               | 22    |
| Scale reliability coefficient | .9712 |

**Table 11. IES-R scale reliability**

#### **4.4.2 Consistency CD-RISC**

The CD-RISC scale used in this study also shows a high interitem correlation (Table 12).

|                               |       |
|-------------------------------|-------|
| Average interitem correlation | .3115 |
| Number of items               | 24    |
| Scale reliability coefficient | .9157 |

**Table 12. CD-RISC reliability**

#### **4.4.3 Consistency combined questionnaire**

The combined questionnaire (IES-R and CD-RISC) scores high on interitem correlation as well as the individual psychometric instruments (Table 13).

|                               |       |
|-------------------------------|-------|
| Average interitem correlation | .2782 |
| Number of items               | 47    |
| Scale reliability coefficient | .9477 |

**Table 13. Combined questionnaire reliability**

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## CHAPTER 5

### DISCUSSION

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This chapter compares the results of this study with the literature. Some implications of this research such as knowledge of populations at risk, the legacies that remain of previous conflict in the country, and concerns that its health care system should address will be argued. In addition some features of this study's design with respect to strengths and weaknesses, applicability and capacity to generalise to the larger population will be discussed.

### 5.1 Demographic variables

#### 5.1.1 Response rate

Of the 109 invitations to participate in the study sent out, 54 usable responses were received. This represents a response rate of 49.5%. This is not an unusually low response rate for an unsolicited social survey, particularly so long after the event under study. The response rate in the 20-year longitudinal Solomon and Mikulincer study was 30%.<sup>44</sup> The Project TALENT study, where a Vietnam veteran cohort was approached 11 to 27 years after serving in Vietnam had a final response rate of 80%.<sup>32</sup> The longitudinal study by Schnurr et al. 24 years after the original survey in the Hawaii Veterans Study had a response rate of 69%. It appears from the literature that studies conducted with the resources and the credibility of the Veteran's Affairs research teams show response rates of 70 to 85%. The highest response rates, up to 100%, have been reported by the military, but arguably under conditions where there is an element of coercion.

#### 5.1.2 Year of intake

The responses were mainly evenly distributed over the years covered by the study. This is noteworthy, since most of the addresses obtained were for the years 1977 and 1979. This implies that responses from former matriculants from other years are the result of snowball sampling. From 1985 onwards the numbers decline. This may reflect a demographic change as 1985 was the year when the first State of Emergency was declared and troops were ordered into the townships for the

first time. This year marked the point where real resistance to conscription, and evasion of conscription began to grow.<sup>120</sup>

### **5.1.3 Age of respondents at intake**

The spread of respondents by age at intake (Figures 2 and 3) reflected one of the pervasive realities of combat-related PTSD as noted by Herman (1992). She noted that the average age of the Vietnam combat soldier was 19<sup>8(p.61)</sup>. The majority of respondents in this sample were younger than 20 years old at the time of their national service: the mean age at intake to the army in this sample was 19.14 yrs. This is congruent with the mean age of 19.2 years in national servicemen in a 1986 study focused on the physical fitness program in the SADF by Gordon et al.<sup>16</sup> This is of interest as the NVVRS found that those who entered the military between the ages of 17 and 19 years were more likely to have PTSD.<sup>27</sup>

### **5.1.4 Religion**

The religious distribution in this study was 43% protestant, 11% catholic and 19% had no religious preference. In the NVVRS 58% of the respondents were protestant, 22% catholic, 17% had no religious preference. This is again a comparable spread with the current study.

### **5.1.5 Marital status and children**

This sample reflects 76% of respondents are in first marriages, and 93% are in a current marriage or relationship. All respondents had children. This would imply that this sample has managed to sustain some level of intimacy.

Similar results are found in other studies: First, the NVVRS study found that 75% of all veterans of the Vietnam era were married (as opposed to 78-84% of the population aged 33-44 years in the total US population). Four fifths of them had children. Second, the Australian Vietnam Veterans Study III reported on by O'Toole et al. in 1996 found that most veterans (86.5%) were married.<sup>27,121</sup>

### **5.1.6 Education**

In this study 78% of respondents had tertiary level education. This contrasts with 40% in the NVVRS. Previous studies have linked low education attainment with vulnerability to PTSD.<sup>122</sup> The design of this study precluded any confirmation of this in a South African context. However, if levels of PTSD in former national servicemen who left school before matriculating are higher than the level found in this sample (as would be expected from the literature), then this would constitute a particularly at-risk group whose size is currently not known. This also must raise concerns regarding the population of former liberation movement cadres where it is known that a high proportion left school prematurely in order to fight.<sup>3</sup> They have had much less access to education than the respondents in this study.

### **5.1.8 Alcohol and drug use**

The alcohol abuse level reported in this study was low at 6%. It is possible that this was under-reported in this sample, since 22% of respondents did not answer this part of the questionnaire. The NVVRS showed lifetime diagnosis of alcohol dependence or abuse to be 39%, and current alcohol abuse or dependence to be 11%. One possibility is that alcohol use has diminished with time. A study by Koenen et al. showed in 1998 that alcohol use diminished markedly between 1984 (ten years after the Vietnam War ended) and 1998 (24 years after the end of the Vietnam War).<sup>123</sup> It is therefore possible that this study shows a much lower alcohol intake now than it would have shown ten or more years ago. Boscarino et al. also found a low level of alcohol and substance abuse in their random sample of veterans on the VES database in 1995.<sup>124</sup>

Cannabis use was reported by 13% of respondents. This may also represent an underestimate since 65% of respondents did not answer this question. By contrast the NVVRS data reflected lifetime drug abuse or dependence of 5.7% and current drug abuse or dependence of 2%. This would appear to show that this sample has higher levels of drug use than the NVVRS group.

## 5.2 Prevalence of PTSD

There is a scarcity of professional literature on the Border War and its health sequelae. The researcher has been unable to find any medical, psychiatric or psychological studies on the prevalence of PTSD in the estimated 600 000 national service conscripts involved in the Border War.<sup>1,2</sup> The prevalence of PTSD in this population is currently unknown. This study marks the first attempt to arrive at a prevalence rate. The prevalence of PTSD in this study sample is 33% which is similar to the original figure for the NVVRS (30.1%)<sup>27</sup> and is much less than the levels reported for child soldiers in the LRA in Uganda which showed levels of 56%.<sup>48</sup>

This current research, however, was most comparable to the Project TALENT study which looked at a cohort of former high school students who were in the ninth grade in 1960 and were followed up 27 years later. The prevalence rate of 19 - 27% found in the Project TALENT study was remarkably close to the findings of this study.<sup>32</sup>

Nonetheless, this study reports a substantially higher prevalence than levels reported in other literature. In 2006 researchers Everatt and Jennings, in a sample of 1196 former liberation fighters, found a prevalence of PTSD of 13%.<sup>4</sup> This prevalence rate is more in accordance with findings in a number of international studies, which vary from 4% in the Iverson King's College Study of Iraq War veterans,<sup>41</sup> 12.1% in soldiers returning from the 1991 Gulf War,<sup>35</sup> to 12-19% in the Hoge et al.<sup>55</sup> and Hotopf et al.<sup>40</sup> studies, to 18.7% in the NVVRS<sup>27</sup> and even to 22% in Nigerian peace-keeping forces in Sierra Leone.<sup>47</sup>

When comparing this prevalence rate to international studies it is important to consider the psychometric instrument used. The different PTSD instruments and scoring systems used in the above studies may account for the variation in prevalence rates. The instruments chosen for measurement in the Iverson et al.<sup>41</sup> study, the Iowa study<sup>36</sup> and the VES<sup>29</sup> could be expected to under-report the prevalence of PTSD as they did not conform closely to the DSM III and IV 17-item criteria for PTSD. In the Uganda study<sup>48</sup> and the Nigerian study<sup>47</sup>, the PTSD checklist (PCL-C) that

has a 17-item scoring system was used for documenting the existence of PTSD. Both of these studies returned much higher prevalence rates, 56% and 22% respectively. The IES-R has scored similarly to the PCL and has yielded a similar score in this study. Both the IES-R and the PCL have a factor structure which closely approximates the DSM IV diagnostic criteria. In general, however, international studies which have scoring systems that approximate closely to the DSM criteria for PTSD show prevalence rates that range from 10% to 20%.<sup>28,32,125</sup>

Another possibility is that this sample had a reduced motivation for combat. Kaplan et al. in a 2002 study of 901 adolescents showed that low motivation to serve in the Israeli army was more strongly associated with PTSD than low education and low intelligence.<sup>117</sup> Similarly, a Norwegian study looking at former Tamil child soldiers' ideological identification with the goals of the conflict also found that PTSD was more strongly linked to weak ideological commitment than to combat exposure.<sup>50</sup>

Another factor which could explain the high prevalence rate for PTSD in this study may be linked to low levels of social support. Commentaries from the perspectives of sociologists<sup>2</sup> and historians<sup>126</sup> suggest that former national servicemen in South Africa experience low levels of social support and this may contribute to the PTSD level found in this study. Boscarino et al. found that Vietnam veterans with low social support had nearly an 80% greater risk of PTSD than veterans with average social support, but they had nearly a 180% greater risk than veterans with high social support.<sup>124(p.330)</sup> Solomon et al. also stressed the protective role the social support played in prisoners of war and veterans of the Yom Kippur War of 1973.<sup>114</sup>

A further factor that could explain the high prevalence rate of PTSD in this study is current age and developmental stage of respondents. Solomon and Mikulincer (2006) in their 20-year longitudinal study of Lebanon War veterans noted an increase in post-traumatic symptoms twenty years after the war which they felt was linked to changes related to aging and mid-life issues. They observe that: "Midlife generally entails some reduction in activity and a shift from planning to reminisce and from occupation with current events to the review and rethinking of one's life. In the course of this

transition, the altered perspective may force the forgotten or suppressed traumatic memories up to the foreground again<sup>44(p.664)</sup>

A similar insight was expressed by Lyons (1991) who took an Eriksonian perspective.<sup>127</sup> She observed that the majority of soldiers exposed to traumatic events were young men, still at the stage of identity development. According to her understanding, at each developmental level the traumatic experience may need to be 'reworked' as the cues of the next level of development become prominent. Relapses over a lifetime are therefore an expected accompaniment to the developmental process.

Most of the men in this sample were aged 16 to 19 years old at the time they experienced combat and violence. According to Erikson, they would have been engaged with the tasks of stage 5: identity vs. role confusion. In terms of Erikson's understanding, problems with the resolution of these tasks, (forming an identity and self-awareness together with a sense of purpose) may carry forward as problems with the next task, the task of stage 6: intimacy vs. isolation. On returning home therefore, this sample would have moved on to forming marital relationships and raising children. At this point difficulties with intimacy could have occurred.

This sample group is now on the cusp of moving from stage 6 to stage 7 where the tasks are generativity vs. stagnation. This viewpoint is also supported by the stream of new memoir type literature written by former national servicemen.<sup>9</sup>

Moreover, in this study, the scores for PTSD were significantly associated with combat exposure. This finding is supported by the findings of the NVVRS<sup>27,82</sup> and Israeli studies.<sup>125</sup> This suggests that the South African experience of the aftermath of the war can be expected to reflect a similar chronicity to that found in the 1995 National Co-Morbidity Study in the USA.<sup>128</sup> It is worth noting that PTSD is not linked only to combat exposure, but also to participating in or witnessing atrocities; and to combat training.<sup>30,88</sup>

The longevity of the disease has implications for health planning - the problem will not go away with time.

### **5.3 Resilience levels in the study population**

This study showed that only a small percentage of the sample scored in the low resilience category (5.6%). By contrast 64.8% of the sample scored in the general population range for resilience. This implies that the study data shows no association between resilience and PTSD. This may mean that the coping strategies employed by this group largely have been effective.

This fits the assertion of Solomon and Dekel in their 2007 study of ex-Prisoners of War that resilience may be enhanced by the stimulus of trauma.<sup>43</sup> In their discussion, Solomon and Dekel note that there are three models of salutary outcomes. First, growth may arise out of traumatic experiences. Second, growth and distress may be two separate, independent dimensions of the traumatic experience, where high scores on one dimension do not necessarily entail low scores on the other. According to this perspective, positive and negative changes emerge as two separate and parallel outcomes. This two-dimensional stress response perspective posits that most people will respond to even extreme stress with some mixture of both resilience and vulnerability. Third, salutary and pathological outcomes are positively correlated; hence the most highly distressed persons are also likely to show the highest psychological growth. There is thus a curvilinear (inverted U) relationship between PTSD symptoms and growth. Participants reporting intermediate levels of symptoms experienced the highest levels of growth. This suggests that there may be an optimal level of distress that promotes resilience. At higher levels of trauma and PTSD, however, a point is reached where the person is overwhelmed by distress and resilience is impaired. This relationship was first mooted by Aldwin, Levenson and Spiro<sup>129</sup> and was supported by Fontana and Rosenheck<sup>130</sup> in their study based on data from the NVVRS.

Four other studies have compared the similar construct of hardiness or other measures of resilience to PTSD in ex-combatants:

Elder and Clipp in a 1989 study found that heavy combat somehow stimulated a capacity for a positive personality response. Despite this, more resilient individuals in their study still had symptoms of emotional distress and impairment, which is comparable with this study.<sup>131</sup> In contrast King et al. in a 1998 study showed that hardiness exhibited a direct *negative* association with PTSD. However, they also noted there was no association between hardiness and combat exposure, which suggested that hardiness is something intrinsic to the individual, rather than a product of combat exposure.<sup>132</sup>

Waysman et al. showed that hardiness had a positive moderating effect on stress (as measured on a combat exposure scale). This study is not entirely comparable since combat exposure and stress were the variables compared with hardiness, rather than PTSD. However their finding that hardiness played a similar role to resilience in moderating the expected consequences of high levels of PTSD, is comparable to this study.<sup>133</sup>

A study by Solomon et al. 1999 was the closest match in the literature to the current study as it measured coping and PTSD. They compared a group of former Prisoners of War (POW) with a control group of combat exposed veterans of the Yom Kippur War. The study documented both positive and negative life effects of trauma. Both groups reported more positive than negative life changes, but the POW group reported more negative life change. They also suggest that post trauma life events (measured in their study) deplete intrapersonal coping resources, and by requiring additional expenditure of energy may decrease hardiness.<sup>114</sup> In the current study traumatic events in later life did not have a significant association with PTSD, but it is possible that a larger sample might reveal a different outcome.

## 5.4 Significant Associations

### 5.4.1 Combat exposure and PTSD

The intention in matching combat exposure to units was to stratify in an expected order of severity from the highest level in the Special Forces and the lowest level in the non-field operatives. The Special Forces group as a group exposed most to combat could have been expected to have the highest level of PTSD, followed by the infantry, artillery and armour group, with the minor field and non-field groups showing progressively smaller levels of PTSD. In this study, the non-field group had a low prevalence of PTSD, on a par with the special forces/minor field group. Thus both the Special Forces/minor field groups and the non-field operatives have similar, low levels of PTSD.

This may suggest that variables used to assess combat exposure need to be reviewed to account for the differences among these groups. However, a similar measure for combat exposure has been used by both King et al. (1998)<sup>132</sup> who made their own construct for combat exposure and hardiness in a study that looked at resilience-recovery factors in 1 632 Vietnam veterans, and Fett et al. (1987)<sup>83</sup> in their Australian study of 19 209 Vietnam veterans and 26 957 Non-Vietnam veterans.

Alternatively the factors promoting protection from PTSD such as a high sociability, a thoughtful active coping style, strong perception of their ability to control their own destiny may have been strongly present in the special forces grouping.<sup>8(p.58)</sup> It is possible that the Special Force contingent with its sense of being an elite corps have some of these attributes, while the minor field operatives were busy with tasks that occupied them safely and relatively remote from combat. This is in contrast to the findings of Hendin and Haas<sup>88</sup> as well as Dowrenwend et al.<sup>30</sup> who noted that soldiers remote from actual battle may still experience vicarious trauma.

Unlike the findings of Koenen et al. there was no significant relationship between divorce and PTSD, or between divorce and combat exposure. This may be because of the small size of the sample in this study.<sup>123</sup>

However, the data in this study are consistent with both the NVVRS and the Fett et al. study which show a significant dose-response between combat exposure and PTSD.<sup>27,83</sup>

#### **5.4.2 Combat exposure and resilience**

This study has not shown an association between combat exposure and resilience. This, again, is consistent with the research findings that suggest that there is a complex relationship between combat exposure and PTSD. It is possible that this study has selected the more resilient members of the study population by its nature (use of an internet-based questionnaire which could imply that a certain income is needed to provide access to the internet). Alternatively, the levels of exposure may have been in the area of the curvilinear relationship suggested by Solomon et al, where there is an exponential increase in resilience for the level of trauma experienced in this group.<sup>43</sup>

#### **5.4.3 Cannabis use and PTSD**

The finding in this study that there is a link between cannabis use and PTSD is consistent with the NVVRS study.<sup>27</sup>

### **5.5 Limitations of the study**

The limitation of this study is that the small sample size reduces its predictive power. First, addresses for only 109 potential respondents out of a sample of 1527 were found. The resistance of the Parktown Foundation to providing the addresses may be a manifestation of the attitudes of the society which has been characterised as wishing the problem and the memories away. Second, of those 90 individuals who responded, 54 provided responses that were contributory to the study. This represents an attrition rate of 40%. The researcher was unable to find a way of accessing a big enough proportion of the sample population to gain statistical power, which required 218 responses. However this response rate was similar rate to that reported by Okulate and Jones in their study of Nigerian soldiers,<sup>47</sup> Stein et al.<sup>134</sup> in their study of clinic attendees in a primary care setting in California, and Solomon and Mikulincer in their 20-year longitudinal study of

Lebanon War veterans.<sup>44</sup> Considering the sensitive nature of PTSD therefore, it may be unlikely that a significantly higher response rate could have been obtained.

This attrition rate may also be linked to the 22 to 35 year gap between the national service experience and the study, and the fact that this is an unsolicited survey concerning a very sensitive issue.

In the analysis of the data in this study, only completed questionnaires were utilized for analysis. In other studies, such as the Pham, Vinck and Stover study on former child soldiers in the Lord's Resistance Army<sup>48</sup> all completed data sections were utilized for analysis. It is possible that the study would have gained more power with this technique.

The study sample is drawn from a specific population, a mainly English medium high school, which may be completely unrepresentative of other high school settings, such as an Afrikaans medium high school or high schools in other regions.

As noted above, those who participated in the study may have been the most empowered and resilient members of the sample population and the study has not accessed respondents with lower means in terms of internet access, time and emotional capacity. Former national servicemen who have low resilience and high levels of PTSD might have avoided responding to the survey, using avoidance as a coping mechanism.

Despite these limitations, this study provides a contribution. As far as the researcher is aware, it is the first contribution to medical literature on what could reasonably be expected to be a large population of PTSD sufferers. It does provide valuable information on PTSD and coping. This is felt to be a subject that deserves further research, especially using larger samples.

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## **CHAPTER 6**

### **CONCLUSIONS**

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This study concludes that the prevalence of PTSD in this sample group was 33%. This level is higher than levels reported for other international populations of ex-combatants. Medical doctors in primary care settings need to be aware that a significant percentage of former national servicemen in their patient base who have been exposed to combat may be suffering from PTSD.

There is a high level of resilience in the population studied. This may imply that the coping strategies used by this population may be effective in minimizing the psychological impact of combat exposure.

There is no statistically significant relationship between the IES-R scale and the CD-RISC scale.

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## **CHAPTER 7 RECOMMENDATIONS**

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Primary care practitioners should consider probing for trauma history during clinical consultations with ex-combatants and refer those with positive responses to a network of health care providers, such as psychologists and psychiatrists who are skilled in managing PTSD.

It is suggested that PTSD be introduced into regular continuing medical education programmes for family practitioners.

There needs to be an introduction of awareness of the needs of ex-combatants and a formulation of health policy in terms of screening and treatment programs in South Africa, both by the South African National Defence Force and by the Department of Health.

The longevity of the disease suggests a need for longitudinal studies that could analyze trends and track the influence of variables such as combat exposure and pre-existing traumatic experiences, treatment influences, social support and post national service traumatic events and match them with PTSD levels over time.

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## REFERENCES

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- [1] Baines G. Coming to terms with the 'Border War' in Post Apartheid South Africa. Paper presented at the National Arts Festival; 2008 1 July; Grahamstown; 2008.
- [2] Gear S. Now that the war is over. Ex-combatants, transition & the question of violence: a literature review. Johannesburg: Centre for the Study of Violence and Reconciliation; 2002.
- [3] Gear S. Wishing Us Away: Challenges Facing Ex-combatants in the 'New' South Africa. Braamfontein: CSVR 2002:124.
- [4] Everatt D, Jennings R. Only useful until democracy? Reintegrating ex-combatants in post-apartheid South Africa with lessons from Kosovo and Zimbabwe. Atlantic Philanthropies 2006 [updated 2007; cited 2011 Mar 16] Available from <http://www.s-and-t.co.za/downloads/2007/Ex-combatant%20booklet.pdf:1-52>.
- [5] American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. Fourth Edition - Text Revision, (DSM IV TR) ed. Washington DC: American Psychiatric Association 2000.
- [6] American Psychiatric Association. Diagnostic and Statistical Manual of Psychiatric Disorders (DSM III). Washington DC: American Psychiatric Association 1980.
- [7] Friedman MJ. Post-Traumatic and Acute Stress Disorders: the latest assessment and treatment strategies. 1st ed. Kansas City: Dean Psych Press 2006.
- [8] Herman JL. Trauma & Recovery: From Domestic Abuse to Political Terror. 1st ed. London: Harper-Collins, Basic Books 1992.
- [9] Baines G. Introduction: Challenging the Boundaries, Breaking the silences. In: Baines G, Vale P, eds. *Beyond the Border War: New perspectives on Southern Africa's Late-Cold War Conflicts*. Pretoria: Unisa Press 2008:1-21.
- [10] Cock J, Nathan L, eds. War and Society: The Militarisation of South Africa. 1st ed. Johannesburg and Cape Town: David Philip 1989.
- [11] Truth and Reconciliation Commission of South Africa. The Truth and Reconciliation of South Africa Report: Vol 5. In: Justice, ed.: CTP Book Printers 1998:125-69.
- [12] Truth and Reconciliation Commission of South Africa. The Truth and Reconciliation Commission of South Africa Report: Vol 4. In: Justice, ed. Cape Town: CTP Book Printers 1998:220-47.

- [13] The Amnesty Committee. Application in terms of Section 18 of the Promotion of National Unity and Reconciliation Act, No 43 of 1995. Sean Mark Callaghan Applicant. *Truth and Reconciliation Commission - Decisions* 2001:1-9.
- [14] Lange JT, Lange CL, Cabaltica RBG. Primary care treatment of post-traumatic stress disorder. *Am Fam Physician*. 2000 Sep;62:1035-40,46.
- [15] Gordon NF, Hugo EP, Cilliers JF. The South Defence Force physical training programme Part III. Exertion-related injuries sustained at an SADF basic training centre. *South African Medical Journal*. 1986 Apr;69:491-4.
- [16] Gordon NF, Van Rensburg JP, Moolman J, Kruger PE, Russell HMS, Grobler HC, et al. The South African Defence Force physical training programme Part I. Effect of 1 year's military training on endurance fitness. *South African Medical Journal*. 1986 Apr;69:477-82.
- [17] Levin A. The pattern of drug-taking among drug-dependent South African national servicemen. *South African Medical Journal*. 1972 Nov;56:1690-4.
- [18] Gear S. The Road Back: Psychosocial strains of Transition for South Africa's ex-combatants. In: Baines G, Vale P, eds. *Beyond the Border War: New perspectives on Southern Africa's Late-Cold War Conflicts*. Pretoria: Unisa press 2008:245-66.
- [19] Mogapi N. Reintegration of soldiers: The missing piece. *Intervention*. 2004 Nov;2(3):221-5.
- [20] Naidoo S. Exploring the challenges facing former combatants in post apartheid South Africa [Master of Arts thesis]. Johannesburg: University of the Witwatersrand; 2007.
- [21] Draper C. Psychological Experiences of Military Conscription on South Africa during the 1970's and 1980's [Honours]. Cape Town: University of Cape Town; 1999.
- [22] Price L. A documentation of the experiences of military conscripts in the South African Defence Force [M Soc Sci]. Durban: Natal; 1989.
- [23] Koen G. Understanding and treating combat-related post traumatic stress disorder: a soldier's story [Master's thesis]. Grahamstown: Rhodes; 1991.
- [24] Hodgson SRC. The psychological sequelae of involvement in combat: A preliminary investigation [Master's thesis]. Grahamstown: Rhodes; 1992.
- [25] Moorcroft HS. The relationship between experiences in the South African special forces and current levels of well-being and sense of coherence [master's dissertation]. Pretoria: University of Pretoria; 2007.

- [26] Sandler D. The psychological experiences of white conscripts in the black townships. In: Cock J, Nathan L, eds. *War and Society: The militarisation of South Africa*. Cape Town & Johannesburg: David Philip 1989:361.
- [27] Kulka RA, Schlenger WE, Fairbank JA, Hough RL, Jordan BK, Marmar CR, et al. Trauma and the Vietnam War generation: Report of findings from the National Vietnam Veterans Readjustment study. New York: Brunner/Mazel 1990.
- [28] Dohrenwend BP, Turner JB, Turse NA, Adams BG, Koenen KC, Marshall R. The psychological risks of Vietnam for U.S. veterans: A revisit with new data and methods. *Science*. 2006 Aug;313:979-82.
- [29] US Centers for Disease Control. Health status of Vietnam veterans.I. Psychosocial characteristics. The Vietnam experience study. *JAMA*. 1988;259:2701-7.
- [30] Dohrenwend BP, Turner JB, Turse NA, Adams BG, Koenen KC, Marshall R. Continuing controversy over the psychological risks of Vietnam for U.S. veterans. *Journal of Traumatic Stress*. 2007 Aug 20(4):449-65.
- [31] Thompson WW, Gottesman II, Zalewski C. Reconciling disparate prevalence rates of PTSD in large samples of US male Vietnam veterans and their controls. *BMC Psychiatry*. 2006 May;6(19):1-10.
- [32] Card JJ. Epidemiology of PTSD in a national cohort of Vietnam Veterans. *Journal of Clinical Psychology*. 1987 Jan;43(1):6-17.
- [33] Friedman MJ, Ashcraft ML, Beals JL, Keane TM, Manson SM, Marsella AJ. Matsunaga Vietnam Veterans Project. White River Junction, VT: VA National Center for PTSD; 1997.
- [34] Schnurr PP, Lunney CA, Sengupta A, Waelde LC. A descriptive analysis of PTSD chronicity in Vietnam veterans. *Journal Of Traumatic Stress*. 2003 Dec;16(6):545-53.
- [35] Kang HK, Natelson BH, Mahan CM, Lee KY, Murphy FM. Post-Traumatic Stress Disorder and Chronic Fatigue Syndrome-like Illness among Gulf War Veterans: A Population-based Survey of 30,000 Veterans. *American Journal of Epidemiology*. 2003;157:141-8.
- [36] Iowa Persian Gulf Study Group. Self-reported illness and health status among Gulf War veterans: A population-based study. *Journal of the American Medical Association*. 1997;277:238-45.

- [37] Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, Koffman RL. Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *New England Journal of Medicine*. 2004 Jul;351(1):13-22.
- [38] Hoge CWMD, Auchterlonie JLMS, Milliken CSMD. Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan. *JAMA*. 2006;295(9):1023-32.
- [39] Milliken CS, Auchterlonie JL, Hoge CW. Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq War. *JAMA* 2007 Nov;298(18):2141-8.
- [40] Hotopf M, Hull L, Fear NT, Browne T, et al. The health of UK military personnel who deployed to the 2003 Iraq war: a cohort study. *Lancet*. 2006 May;367(9524):1731-41.
- [41] Iverson AC, van Staden L, Hacker Hughs J, Browne T, Hull L, Hall J, et al. The prevalence of common mental disorders and PTSD in the UK military: using data from a clinical interview-based study. *BMC Psychiatry*. 2009 Oct;9(68).
- [42] Solomon Z, Neria Y, Ohry A, Waysman M, Ginzburg K. PTSD among Israeli former prisoners of war and soldiers with combat stress reaction: A longitudinal study. *The American Journal of Psychiatry*. 1994;151(4):554.
- [43] Solomon Z, Dekel R. Posttraumatic stress disorder and posttraumatic growth among Israeli ex-POWs. *Journal of Traumatic Stress*. 2007 Jun;20(3):303-12.
- [44] Solomon Z, Mikulincer M. Trajectories of PTSD: A 20-Year Longitudinal Study. *The American Journal of Psychiatry*. 2006;163(4):659.
- [45] Kozarić-Kovalević D, Borovečki A. Prevalence of psychotic comorbidity in combat-related post-traumatic stress disorder. *Military Medicine*. 2005;170(3):223-6.
- [46] Seedat S, Le Roux C, Stein DJ. Prevalence and characteristics of trauma and post-traumatic stress symptoms in operational members of the South African National Defence Force. *Military Medicine*. 2003 Jan;168(1):71-5.
- [47] Okulate GT, Jones OBE. Post-traumatic stress disorder, survivor guilt and substance use in a study of hospitalised Nigerian army veterans. *South African Journal of Psychiatry*. 2006 Mar;12(1):37-40.

- [48] Pham PN, Vinck P, Stover E. Returning home: forced conscription, reintegration, and mental health status of former abductees of the Lord's Resistance Army in northern Uganda. *BMC Psychiatry*. 2009;9(23):1-32.
- [49] Derluyn I, Broekaert E, Schuyten B, De Temmerman E. Post-traumatic stress in former Ugandan child soldiers. *The Lancet*. 2004 Mar;363:861-3.
- [50] Kanagaratnam P, Raundalen M, Asbjørnsen AE. Ideological commitment and posttraumatic stress in former Tamil child soldiers. *Scandinavian Journal of Psychology*. 2005;46:511 ï 20.
- [51] Foa EB, Meadows EA. Psychosocial treatments for posttraumatic stress disorder: A critical review. *Annual Reviews in Psychology* 1997;48:449-80.
- [52] Brewin CR. Systematic review of screening instruments for adults at risk of PTSD. *Journal Of Traumatic Stress*. 2005 Feb;18(1):53-62.
- [53] Watson CG, Juba MP, Manifold V, Kucala T, Anderson PED. The PTSD interview: Rationale, description, reliability and concurrent validity of a DSM-III-based technique. *Journal of Clinical Psychology*. 1991 Mar;47(2):179-88.
- [54] Runtz MG, Roche DN. Validation of the Trauma Symptom Inventory in a Canadian sample of university women. *Child Maltreatment*. 1999;4:69-80.
- [55] Horowitz M. *Stress Response Syndromes*. Northvale,NJ: Jason Aronson 1986.
- [56] Weiss DS, Marmar CR. The Impact of Event Scale - Revised. In: Keane JPWTM, ed. *Assessing psychological trauma and PTSD: A handbook for practitioners*. New York: Guilford Press 1997:399-411.
- [57] McFall ME, Smith DE, Roszell DK, Tarver DJ, Malas KL. Convergent validity of measures of PTSD in Vietnam combat veterans  
*American Journal of Psychiatry*. 1990;147:645-8.
- [58] Keane TM, Wolfe J, Taylor KL. Post-traumatic stress disorder: Evidence for diagnostic validity and methods of psychological assessment. *Journal of Clinical Psychology*. 1987 Jan;43(1):32-43.
- [59] Norris AE, Aroiana KJ. Assessing reliability and validity of the Arabic language version of the Post-traumatic Diagnostic Scale (PDS) Symptom items. *Psychiatric Research*. 2008 Sep;160(3):327-34.

- [60] McDonald SD, Calhoun PS. The diagnostic accuracy of the PTSD Checklist: A critical review. *Clinical Psychology Review*. 2010 Dec;30(8):976-87.
- [61] Blanchard EB, Jones-Alexander J, Buckley TC, Forneris CA. Psychometric properties of the PTSD checklist (PCL). *Behaviour Research and Therapy*. 1996;34(8):669-73.
- [62] Briere J, Spinazzola J. Phenomenology and psychological assessment of complex posttraumatic states. *Journal Of Traumatic Stress*. 2005 Oct;18(5):401-12.
- [63] Roe-Berning SE. The complexity of posttraumatic growth: Evidence from a South African sample [Master of Arts in Psychology]. Johannesburg: University of the Witwatersrand; 2009.
- [64] Nemeroff CB, Bremner JD, Foa EB, Mayberg HS, North CS, Stein MB. Posttraumatic stress disorder: A state-of-the-science review. *Journal of Psychiatric Research*. 2006;40(1):1-21.
- [65] Sloan P, Arsenault L, Hilsenroth MJ. Impact of Event Scale prediction of DSM-IV PTSD and physical symptoms in Gulf War veterans. *Stress, Trauma & Crisis: An International Journal*. 2005 Oct;8(4):215-28.
- [66] Larsson G. Dimensional analysis of the impact of event scale using structural equation modelling. *Journal of traumatic Stress*. 2000;13(2):193-204.
- [67] Elhai JD, Gray MJ, Kashdan TB, Franklin CL. Which instruments are most commonly used to assess traumatic event exposure and posttraumatic effects?: A survey of traumatic stress professionals. *Journal Of Traumatic Stress*. 2005 Oct;18(5):541-5.
- [68] Creamer M, Bell R, Failla S. Psychometric properties of the Impact of Event Scale--Revised. *Behaviour Research and Therapy*. 2003;41(12):1489-96.
- [69] Rivers WHR. An Address on the Repression of War Experience. *The Lancet*. 1918 Feb 2;191(4927):173-7.
- [70] Appel JW, Beebe GW. Preventive Psychiatry: An Epidemiological Approach. *Journal of the American Medical Association*. 1946;131:1468-71.
- [71] Kardiner A, Spiegel H. War, Stress and Neurotic Illness. New York: Hoeber 1947.
- [72] Grinker R, Spiegel JP. Men Under Stress. Philadelphia: Blakeston 1945.
- [73] Liebschutz J, Saitz R, Brower V, Keane T, Lloyd-Travaglini C, Averbuch T, et al. PTSD in urban primary care: high prevalence and low physician recognition. *Journal of General Internal Medicine*. 2007 6 Oct;22(6):719-26.

- [74] Samson AY, Bensen S, Beck A, Price D, Nimmer C. Posttraumatic stress disorder in primary care. *Journal of Family Practice*. 1999 Mar;48(3):222-7.
- [75] Romanoff MR. Assessing military veterans for posttraumatic stress disorder: a guide for primary care clinicians. *Journal of the American Academy of Nurse Practitioners*. 2006 Sep;18(9):409-13.
- [76] Forbes D, Creamer M, Allen N, Elliott P, McHugh T, Debenham P, et al. The MMPI-2 as a predictor of symptom change following treatment for posttraumatic stress disorder. *Journal of Personality Assessment*. 2002 Oct;79(2):321-36.
- [77] Bollinger AR, Riggs DS, Blake DD, Ruzek JI. Prevalence of personality disorders among combat veterans with posttraumatic stress disorder. *Journal of Traumatic Stress*. 2000 Apr;13(2):255.
- [78] Naggan N. An exploratory study into the relation between post traumatic stress and Axis II personality traits as measured on the MCMI III, in military personnel [Master's in Psychology]. Johannesburg: University of Johannesburg; 2001.
- [79] Taubman-Ben-Ari O, Rabinowitz J, Feldman D, Vaturi R. Post-traumatic stress disorder in primary-care settings: prevalence and physicians' detection. *Psychological Medicine*. 2001;31(3):555.
- [80] Stein MB, Walker JR, Hazan AL, Forde DR. Full and partial posttraumatic stress disorder: findings from a community survey. *American Journal of Psychiatry*. 1997;154(8):1114-9.
- [81] Zlotnick C, Rodriguez BF, Weisberg RB, Bruce SE, Spencer MA, Culpepper L, et al. Chronicity in posttraumatic stress disorder and predictors of the course of posttraumatic stress disorder among primary care patients *Journal of Nervous & Mental Disease*. 2004 Feb;192(2):153-9.
- [82] Koenen KC, Stellman SD, Dohrenwend BP, Sommer JR, M SJ. The consistency of combat exposure reporting and course of PTSD in Vietnam War veterans. *Journal of Traumatic Stress*. 2007 Feb;20(1):3-13.
- [83] Fett MJ, Adena MA, Cobbin DM, Dunn M. Mortality among the Australian conscripts of the Vietnam Conflict Era. I. Death from all causes. *American Journal of Epidemiology*. 1987;125(5):869-77.
- [84] Boscarino JA. Posttraumatic stress disorder and physical illness: Results from clinical and epidemiologic studies. *Annals of the New York Academy of Science* 2004;1032:141-53.

- [85] Boscarino JA. Posttraumatic stress disorder and among U.S. army veterans 30 years after military service. *Annals of Epidemiology*. 2006 Apr 16(4):248-56.
- [86] Norman SB, Means-Christensen AJ, Craske MG, Sherbourne CD, Roy-Byrne PP, Stein MB. Associations between psychological trauma and physical illness in primary care. *Journal of Traumatic Stress*. 2006 08;19(4):461-70.
- [87] Hearst N, Newman TB, Hulley SB. Delayed effects of the military draft on mortality: A randomised controlled natural experiment. *New England Journal of Medicine*. 1986 Mar;314(10):620-4.
- [88] Hendin H, Haas AP. Suicide and Guilt as Manifestations of PTSD in Vietnam Combat Veterans. *American Journal of Psychiatry*. 1991;148:586-91.
- [89] Antonovsky A. The structure and properties of the sense of coherence scale. *Social Science & Medicine*. 1993;36(6):725-33.
- [90] Lambert CE, Jr., Lambert VA. Psychological hardiness: state of the science. *Holistic Nursing Practice*. 1999 04;13(3):11-9.
- [91] Funk SC, Houston BK. A critical analysis of the Hardiness Scale's validity and utility. *Journal of Personality and Social Psychology*. 1987;53(3):572-8.
- [92] Pearlin LI, Schooler C. The structure of coping. *Journal of Health & Social Behavior*. 1978 03;19(1):2-21.
- [93] Lazarus RS, Folkman S. *Stress, appraisal and coping*. Berlin, Heidelberg, New York: Springer 1984.
- [94] Folkman S, Moskowitz JT. Coping: Pitfalls and Promise. *Annual Review of Psychology*. 2004 Feb;55(1):745-74.
- [95] Folkman S, Lazarus RS. *Ways of Coping questionnaire*. Palo Alto, CA: Consult. Psychol. Press 1988.
- [96] Hyer L, Boudewyns PA, Sperr E, McCranie EW. Modes of long-term coping with trauma memories: Relative use and associations with personality among Vietnam veterans with Chronic PTSD. *Journal of Traumatic Stress*. 1996 Apr;9(2):299-316.
- [97] Littleton H, Horsley S, John S, Nelson DV. Trauma coping strategies and psychological distress: A meta-analysis. *Journal of Traumatic Stress*. 2007 Dec;20(6):977-88.

- [98] Carver CS, Scheier MF, Weintraub KJ. Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*. 1989;56(2):267-83.
- [99] Solomon Z, Berger R. Coping with the aftermath of terror-resilience of ZAKA body handlers. *Journal of Aggression, Maltreatment & Trauma*. 2005 03;10:593-604.
- [100] Muller L, Spitz E. [Multidimensional assessment of coping: validation of the Brief COPE among French population]. *L'encéphale*. 2003 11;29(6):507-18.
- [101] Kallasmaa T, Pulver A. The structure and properties of the Estonian COPE inventory. *Personality and Individual Differences*. 2000 11;29(5):881-94.
- [102] Costa J, Gouveia JP. Contribuição para o estudo das qualidades psicométricas de uma medida para lidar com acontecimentos geradores de stress: Abordagem preliminar da Adaptação Portuguesa da COPE. *Psychologica*. 2008;48:125-57.
- [103] Ivanov PA, Garanyan NG. Validation of the Coping Strategies Questionnaire COPE. (English). *Psychological Science & Education*. 2010 Mar(1):82-93.
- [104] Carver CS. You want to measure coping but your protocol's too long: consider the brief COPE. *International Journal Of Behavioral Medicine*. 1997;4(1):92-100.
- [105] Greene RR. *Social work practice: A risk and resilience perspective*. Belmont, CA: Thomson, Brooks/Cole 2007.
- [106] Ahern NR, Ark P, Byers J. Resilience and coping strategies in adolescents. *Paediatric Nursing*. 2008 12;20(10):32-6.
- [107] Rutter M. Resilience in the face of adversity: protective factors and resistance to psychiatric disorders *Br J Psych*. 1985 Dec;147(6):598-611.
- [108] Rutter M. Resilience, competence, and coping. *Child Abuse & Neglect*. 2007;31(3):205-9.
- [109] Luthar SS, Cicchetti D. The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*. 2000 May;71(3):543.
- [110] Earvolino-Ramirez M. Resilience: a concept analysis. *Nursing Forum*. 2007 Apr;42(2):73-82.
- [111] Connor KM, Davidson JR. Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*. 2003;18(2):76-82.

- [112] Kobasa SC. Stressful life events, personality, and health: an inquiry into hardiness. *J Personality Soc Psychol.* 1979;37:1-11.
- [113] Low J. The concept of hardiness: persistent problems, persistent appeal. *Holistic Nursing Practice.* 1999 Apr;13(3):20-4.
- [114] Solomon Z, Waysman M, A. , Neria Y, Ohry A, et al. Positive and negative changes in the lives of Israeli former prisoners of war. *Journal of Social and Clinical Psychology.* 1999;18(4):419.
- [115] Newman E, Kaloupek D. Overview of research addressing ethical dimensions of participation in traumatic stress studies: Autonomy and beneficence. *Journal of Traumatic Stress.* 2009 12;22(6):595-602.
- [116] Asukai N, Kato H, Kawamura N, Kim Y, Yamamoto K, Kishimoto J, et al. Reliability and validity of the Japanese-language version of the Impact of Event Scale-Revised (IES-R-J): Four studies of different traumatic events. *Journal of Nervous & Mental Disease.* 2002;190(3):175-82.
- [117] Kaplan Z, Weiser M, Reichenberg A, Rabinowitz J, Caspi A, Bodner E, et al. Motivation to serve in the military influences vulnerability to future posttraumatic stress disorder. *Psychiatry Research.* 2002;109(1):45-9.
- [118] Rosenheck R. Impact of Posttraumatic Stress Disorder of World War II on the Next Generation. *Journal of Nervous and Mental Disease.* 1986 Jun;174(6):319-27.
- [119] Rosenheck R, Nathan P. Secondary Traumatization in Children of Vietnam Veterans. *Hospital and Community Psychiatry.* 1985 May;36(5):538-9.
- [120] Craig D. 'Total Justification': Ideological Manipulation and South Africa's Border War. In: Baines G, Vale P, eds. *Beyond the Border War: New Perspectives on Southern Africa's Late-Cold War Conflicts.* Pretoria: UNISA press 2008:56-74.
- [121] O'Toole B, Marshall RP, Grayson DA, Schureck RJ, Dobson M, Ffrench M, et al. The Australian Vietnam Veterans Health Study: III. Psychological health of Australian Vietnam Veterans and its relationship to combat. *International Journal of Epidemiology.* 1996;25(2):331-9.
- [122] O'Toole BI, Marshall RP, Schureck RJ, Dobson M. Risk factors for posttraumatic stress disorder in Australian Vietnam veterans. *Australian & New Zealand Journal of Psychiatry.* 1998;32(1):21-31.
- [123] Koenen KC, Stellman SD, Sommer JFJ, Stellman JM. Persisting posttraumatic stress disorder symptoms and their relationship to functioning in Vietnam veterans: a 14-year follow-up. *Journal Of Traumatic Stress.* 2008;21(1):49-57.

- [124] Boscarino JA. Post-Traumatic Stress and Associated Disorders Among Vietnam Veterans: The Significance of Combat Exposure and Social Support. *Journal of Traumatic Stress*. 1995;8(2):317-36.
- [125] Solomon Z, Mikulincer M. Combat stress reactions, post traumatic stress disorder and somatic complaints among Israeli soldiers. *Journal of Psychosomatic Research*. 1987;31(1):131-7.
- [126] Baines G. South Africa's Vietnam? *The South African Historical Journal*. 2004 Feb;5(3):1-21.
- [127] Lyons JA. Issues to Consider in Assessing the Effects of Trauma: Introduction. *Journal of Traumatic Stress*. 1991 01;4(1):3-6.
- [128] Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB. Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry*. 1995 Dec;52(12):1048-60.
- [129] Aldwin CM, Levenson MR, Spiro AJ. Vulnerability and resilience to combat exposure: Can stress have lifelong effects? . *Psychology and Aging*. 1994;9:33-44.
- [130] Fontana A, Rosenheck R. Psychological Benefits and Liabilities of Traumatic Exposure in the War Zone. *Journal of Traumatic Stress*. 1998 Jul;11(3):485-503.
- [131] Elder Jr GH, Clipp EC. Combat experience and emotional health: Impairment and resilience in later life. *Journal of Personality*. 1989 Jun;57(2):311-41.
- [132] King LA, King DW, Fairbank JA, Keane TM, Adams GA. Resilience-recovery factors in posttraumatic stress disorder among female and male Vietnam veterans: hardiness, postwar social support, and additional stressful life events. *Journal of Personality and Social Psychology*. 1998;74(2):420-34.
- [133] Waysman M, Schwarzwald J, Solomon Z. Hardiness: An examination of its relationship with positive and negative long term changes following trauma. *Journal of Traumatic Stress*. 2001 07;14(3):531.
- [134] Stein MB, McQuaid JR, Pedrelli P, Lenox R, McCahill ME. Posttraumatic stress disorder in the primary care medical setting. *General Hospital Psychiatry*. 2000;22:261-9.

## APPENDICES

### Appendix A: Email invitation



Dear Old Parktonian

I am doing a study at Wits University looking at the possibility that the time spent in the army or the police as a national serviceman could still be influencing aspects of happiness and decision-making today. Very little has been researched about the experience of national servicemen in South Africa although the war lasted at least 15 years.

Please consider participating in the study by completing the web-based questionnaire at the university website. It will take about 15 to 20 minutes of your time. If you did not do national service I would still value your noting this on the questionnaire.

Below is a link to the questionnaire on the Wits website, which explains more fully. Please will you pass the link on to any Old Parktonians you are in contact with. I am interested in contacting anyone who was at the school who matriculated in the years 1975 to 1988, or would have matriculated in those years, but moved away from the school.

Thanks Guys

Martin Connell (Class of 1977)

<http://chse.health.wits.ac.za/limesurvey/index.php?sid=73641>

## Appendix B: Questionnaire



### Old Parktonian Army Service Survey

Dear Old Parktonian

I am a postgraduate student at the University of the Witwatersrand Medical School, conducting a research project as a requirement for a Masters in Family Medicine degree. The research is about Post Traumatic Stress Disorder and coping strategies in former national servicemen who were called up between 1975 and 1988.

I would like to invite you to participate in this research. Participation involves completing an anonymous, web-based questionnaire, which will automatically be submitted back to me when you have completed it. The questionnaire is completely anonymous and you cannot be identified in any way. The information you provide goes onto a secure University-based system.

The purpose of this research is to look at the possibility that time in the army as a national serviceman still could be influencing aspects of happiness and decision-making today. Research suggests that even basic training was capable of triggering a severe stress response, which could influence aspects of life for many years. Not all people have this response. Many people who do have it get over it by themselves. Very little has been researched about the experiences of national servicemen in the South Africa.

Please fill in the questionnaire as carefully and completely as possible. It takes about 15 minutes to fill in. You may, however choose to leave any question or parts of the questions unanswered if you wish. But please submit the questionnaire anyway for statistical purposes. You cannot be penalised in any way for not filling in the questionnaire or any part of it.

After submitting your anonymous, confidential data, you will then be taken to a preformed email that cannot be linked in any way to the survey data, but will let me know who has submitted a completed form. This will save you getting a reminder later. I would like to assure you that any information you share with me will be strictly confidential and your name will not be linked to any part of the research.

It may be that you will feel this issue is too upsetting to deal with. If this is so could you please tick the box provided and send the questionnaire back to me, so that I know that that is your response to this study. Also, if you wish I can send you feedback on the results of the study. Just tick the appropriate box.

If, after completing this questionnaire you experience any level of distress, there are a number of service providers that specialize in the kind of counseling you may need. Firstly the Centre for the Study of Violence and Reconciliation (CSVr) on the 4<sup>th</sup> floor of the Braamfontein Centre in Johannesburg (telephone number; 011 403 5102, internet address; [info@csvr.org.za](mailto:info@csvr.org.za)), or the The Trauma Centre at Cowley House, 126 Chapel Street, Woodstock in Cape Town (telephone number 021 465 7373; internet address; [www.trauma.org.za](http://www.trauma.org.za)), both of which provide free counselling services. In South Africa it would be possible to refer respondents who needed it for counselling with counsellors accredited by the South African Institute for Traumatic Stress at 18a Gill Street, Observatory, Johannesburg accessible telephonically via 011 648 7376, or on the internet at [saits@saits.org.za](mailto:saits@saits.org.za). Outside South Africa you can approach The National Centre for PTSD , [ncptsd@ va.gov](mailto:ncptsd@va.gov) in the USA or [www.uktrauma.org.uk/ukservcs.html](http://www.uktrauma.org.uk/ukservcs.html) in the United Kingdom. In addition you can call or email me at any time if this happens.

If you have any questions or concerns about this study you are welcome to contact me at the numbers provided above or via my email: [martcon@icon.co.za](mailto:martcon@icon.co.za) .If you know any other Old Parktonian who may be prepared to do this survey please forward this link to him.

Thank you for your valuable time.

Regards

Martin Connell

| <b>A</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>note</b> | <b>on</b> | <b>privacy</b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------|----------------|
| This                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | survey      | is        | anonymous.     |
| The record kept of your survey responses does not contain any identifying information about you unless a specific question in the survey has asked for this. If you have responded to a survey that used an identifying token to allow you to access the survey, you can rest assured that the identifying token is not kept with your responses. It is managed in a separate database, and will only be updated to indicate that you have (or haven't) completed this survey. There is no way of matching identification tokens with survey responses in this survey. |             |           |                |

*There are 21 questions in this survey*

## **Involvement with National Service**

*Eliminates those respondents who were not conscripted after establishing why they were exempt.*

**1 Did you do national service in the South African Defence Force or the South African Police? \***

Please choose only one of the following:

- ☐ Yes
- ☐ No

*\* Mandatory answer: A 'No' answer takes respondents to the end to exit the survey; a 'Yes' answer allows them to proceed.*

**2 If you answered no to the above question, did you not do National Service because you:**

Please choose only one of the following:

- ☐ Left South Africa to escape national service
- ☐ Left South Africa for other reasons
- ☐ Was a conscientious objector
- ☐ Was not eligible or medically exempt

Choose the option that fits the best.

## **Demographic Information**

*Information on language, marital status and children, religion, education, military service details, exposure to combat, psychological or psychiatric help.*

**3 What is your home language?**

Please choose only one of the following:

- ☐ English
- ☐ Afrikaans
- ☐ Greek
- ☐ Italian
- ☐ Portuguese
- ☐ Other

**4 What is your marital status?**

Please choose only one of the following:

- ☐ Married
- ☐ Divorced and now single
- ☐ Divorced and remarried
- ☐ Divorced and in a steady relationship
- ☐ Currently single
- ☐ In a steady relationship, never married
- ☐ Widowed
- ☐ Widowed and now in a steady relationship

Select the option that fits your life now the best

**5 Do you have children?**

Please choose only one of the following:

- ☐ Yes
- ☐ No

**6 If you answered yes to the above question, indicate how many children you have**

(Only answer this question if you answered 'Yes' to question '5')

Please write your answer here:

**7 Would you consider yourself connected to any of the following religious orientations?**

Please choose only one of the following:

- ☐ Jewish
- ☐ Atheist
- ☐ Agnostic
- ☐ Anglican
- ☐ Methodist
- ☐ Presbyterian
- ☐ Lutheran
- ☐ Dutch Reformed
- ☐ Roman Catholic
- ☐ Buddhist
- ☐ Muslim
- ☐ Other

**8 What work do you do?**

Please write your answer here:

**9 What is the highest level of education you reached?**

Please choose only one of the following:

- ☐ Standard 8
- ☐ Matric
- ☐ Trade Certificate
- ☐ Technical College
- ☐ University degree
- ☐ Postgraduate

**10 How many years old were you when you went into the army or the police?**

Please write your answer here:

**11 What intake were you?**

Please choose only one of the following:

- ☐ 1975
- ☐ 1976

- ☐ 1977
- ☐ 1978
- ☐ 1979
- ☐ 1980
- ☐ 1981
- ☐ 1982
- ☐ 1983
- ☐ 1984
- ☐ 1985
- ☐ 1986
- ☐ 1987
- ☐ 1988
- ☐ 1989

## 12 Where did you serve in the army or the police?

Please choose all that apply and provide a comment:

☐ First posting to? ☐ Second posting to? ☐ Fifth posting to?

☐ Date? ☐ Date? ☐ Date?

☐ Rank? ☐ Rank? ☐ Rank?

☐ Third posting to? ☐ Fourth posting to?

☐ Date? ☐ Date?

☐ Rank? ☐ Rank?

## 13 What was your exposure to the Border and combat or exchange of fire?

Please choose all that apply and provide a comment:

- ☐ How many days were you on the Border?
- ☐ Were you exposed to exchange of fire or to combat? Explain
- ☐ Did you witness acts of war against civilians?

Don't answer items 2 or 3 if this causes discomfort

## 14 Have you been exposed to any of the following other forms of trauma\*?

Please choose all that apply:

- ☐ Victim of armed robbery
- ☐ Victim of an assault
- ☐ Victim of a serious industrial accident
- ☐ Domestic violence
- ☐ Witnessed or victim of a natural disaster
- ☐ Witnessed or victim of a serious vehicle accident
- ☐ Other

\* Significant traumatic events that recur in your thoughts, that may keep you awake at night, or cause anxiety.

### 15 What kind of healthcare input, if any, did you have after your national service in the army or the police? \*

Please choose all that apply and provide a comment:

- ☐ Did you see any health professional for counselling after your return from the army? Comment
- ☐ Did you receive medication after your return from the army? If so what?
- ☐ Did you see a GP or a psychiatrist after you returned from the army? Comment
- ☐ Have you had medication or counselling for anxiety or stress since? Comment
- ☐ Did you have any counselling or medication for emotional problems before the army? Comment

\* This includes for difficulty sleeping, anxiety, depression, alcohol or drug problems.

### 16 Do you drink alcohol or use recreational drugs?

Please choose all that apply and provide a comment:

- ☐ Do you smoke cigarettes? How many per day?
- ☐ If you drink alcohol? If so, how many drinks per day?
- ☐ Do you take recreational drugs such as cannabis (dagga) or ecstasy? If so, what kinds and how often?
- ☐ Do you take more powerful drugs such as heroin or mandrax? Comment

### Event and Resilience Scales

#### 17 Impact of Event Scale - Revised

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 with respect to your National Service. How much were you distressed or bothered by these difficulties?

Please choose the appropriate response for each item:

|                                                                                       | Not<br>true<br>all<br>0 | Rarely<br>at true<br>1 | Sometimes<br>true<br>2 | Often<br>true<br>3    | True<br>nearly<br>all of the time<br>4 |
|---------------------------------------------------------------------------------------|-------------------------|------------------------|------------------------|-----------------------|----------------------------------------|
| Any reminder brought back feelings about it                                           | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |
| I had trouble staying asleep                                                          | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |
| Other things kept making me think about it                                            | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |
| I felt irritable and angry                                                            | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |
| I avoided letting myself get upset when I thought about it or was reminded of it      | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |
| I thought about it when I didn't mean to                                              | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |
| I felt as if it hadn't happened or wasn't real                                        | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |
| I stayed away from reminders about it                                                 | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |
| Pictures about it popped into my mind                                                 | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |
| I was jumpy and easily startled                                                       | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |
| I tried not to think about it                                                         | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |
| I was aware that I still have a lot of feelings about it, but I didn't deal with them | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |
| My feelings about it were kind of numb                                                | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>                  |

|                                                                                                                         | Not<br>true<br>all<br>0 | Rarely<br>at true<br>1 | Sometimes<br>true<br>2 | Often<br>true<br>3    | True<br>all of the time<br>4 |
|-------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------|------------------------|-----------------------|------------------------------|
| I found myself acting or feeling as though I was back at that time                                                      | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>        |
| I had trouble falling asleep                                                                                            | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>        |
| I had waves of strong feelings about it                                                                                 | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>        |
| I tried to remove it from my memory                                                                                     | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>        |
| I had trouble concentrating                                                                                             | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>        |
| Reminders of it caused me to have physical reactions, such as sweating, troubled breathing, nausea, or a pounding heart | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>        |
| I had dreams about it                                                                                                   | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>        |
| I felt watchful or on guard                                                                                             | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>        |
| I tried not to talk about it                                                                                            | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>        |

Choose the answer that fits best by left clicking on the target. If you forget the names of the columns they will appear when you position your cursor on the target.

### 18 The Connor-Davidson Risk and Resilience Scale

This part of the questionnaire looks at how you have been able to cope with your national service experience.

Please choose the appropriate response for each item:

|                                                     | Not<br>at<br>all<br>0 | Rarely<br>true<br>all<br>1 | Sometimes<br>true<br>2 | Often<br>true<br>3    | True<br>nearly all of the time<br>4 |
|-----------------------------------------------------|-----------------------|----------------------------|------------------------|-----------------------|-------------------------------------|
| I am able to adapt to change                        | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| I have close and secure relationships               | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| Sometimes fate or God can help                      | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| I can deal with whatever comes                      | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| Past success gives confidence for new relationships | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| I see the humorous side of things                   | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| Coping with stress strengthens                      | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| I tend to bounce back after illness or hardship     | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| Things happen for a reason                          | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| Best effort no matter what                          | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| You can achieve your goals                          | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| When things look hopeless I don't give up           | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| I know where to turn for help                       | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| Under pressure I focus and think clearly            | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| I prefer to take the lead in problem solving        | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| I am not easily discouraged by failure              | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| I think of myself as a strong person                | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |
| I can make unpopular or difficult decisions         | <input type="radio"/> | <input type="radio"/>      | <input type="radio"/>  | <input type="radio"/> | <input type="radio"/>               |

|                                        | Not<br>at<br>0        | true<br>all<br>1      | Rarely<br>true<br>2   | Sometimes<br>true<br>3 | Often<br>true<br>4    | True<br>nearly<br>all of<br>the<br>time |
|----------------------------------------|-----------------------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------------------------|
| I can handle unpleasant feelings       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/> |                                         |
| I am not easily discouraged by failure | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/> |                                         |
| I have a strong sense of purpose       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/> |                                         |
| I feel in control of my life           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/> |                                         |
| I like challenges                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/> |                                         |
| I work to attain my goals              | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/> |                                         |
| I have pride in my achievements        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>  | <input type="radio"/> |                                         |

Choose the answer that fits best by left clicking on the target. If you forget the names of the columns they will appear when you position your cursor on the target.

### Reasons for exiting survey

#### 19 Have you completed all the questions you can so far?

Please choose only one of the following:

- ☐ Yes
- ☐ No

#### 20 I don't want to finish this survey because:

(If you answered 'No' to question '19')

Please choose only one of the following:

- ☐ I find this subject too upsetting to think about.
- ☐ I don't want to remember any of this.
- ☐ It was all a long time ago, irrelevant
- ☐ It's a waste of time
- ☐ Other

If you can, please indicate why you don't want to do this survey. Otherwise click the 'Previous' button below to return to the survey and complete it.

#### 21 Thank you for taking some of your valuable time to fill this out.

Please click on the link to sign off on the register that you have done the questionnaire. This will save you possibly being bothered again.

<http://chse.health.wits.ac.za/limesurvey/admin/admin.phpsid=37777>

## SIGN OFF REGISTER FOR RESPONDENTS

Thank you for participating in the survey. I would like to record those who have completed the survey so that I don't bug them by sending a repeat invitation. Please fill in your name, matriculation year and, (if you want to have feedback on the survey results), your email address below in the spaces provided then click **SUBMIT**.

This information cannot be linked in any way to the previous survey. Thank you once again for your participation.

### 1 Name: \*

Please write your answer here:

### 2 Which year did you matriculate?

Please write your answer here:

### 3 Would you like to have feedback on the results of this survey?

Please choose only one of the following:

- ☐ Yes
- ☐ No

### 4 If yes, please enter your email address.

(Only answer this question if you answered 'Yes' to question '3')

Please write your answer here:

**Remember that this register is not linked to the survey and cannot be linked to the answers on the survey**

Thank you for completing this register.

## Appendix C: Ethics Clearance Certificate

**UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG**

Division of the Deputy Registrar (Research)

**HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)**

R14/49 Dr MA Connell

**CLEARANCE CERTIFICATE**

**M091004**

**PROJECT**

Prevalence of Post Traumatic Stress Disorder  
and Coping Strategies among Former South  
African National Servicemen

**INVESTIGATORS**

Dr MA Connell

**DEPARTMENT**

Department of Family Medicine

**DATE CONSIDERED**

2009/10/30

**DECISION OF THE COMMITTEE\***

Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

**DATE** 2009/11/02

**CHAIRPERSON**   
(Professor PL Cleaton-Jones)

\*Guidelines for written 'informed consent' attached where applicable

cc: Supervisor : Dr O Omele

**DECLARATION OF INVESTIGATOR(S)**

To be completed in duplicate and ONE COPY returned to the Secretary at Room 10004, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. I agree to a completion of a yearly progress report.

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...