

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

THE PSYCHOLOGICAL EFFECTS OF PEACEKEEPING SERVICE IN BOSNIA

A dissertation presented in fulfilment of the requirements for the degree of
Doctor of Philosophy in Psychology at Massey University,
Palmerston North, New Zealand.

KATHRYN AUDREY MIRFIN

2004

CERTIFICATE OF REGULATORY COMPLIANCE

This is to certify that the work carried out in the Doctoral thesis entitled "The Psychological Effects of Peacekeeping Service in Bosnia" in the School of Psychology at Massey University, New Zealand:

- (a) is the original work of the candidate, except as indicated by appropriate attribution in the text and/or in the acknowledgements;
- (b) that the text, excluding appendices/annexes, does not exceed 100,000 words;
- (c) all the ethical requirements applicable to this study have been complied with as required by Massey University, other organisations and/or committees (i.e. New Zealand Defence Force and New Zealand Army) which had a particular association with this study, and relevant legislation.

Candidate's Name: KA MIRFIN

Signature:



Date: 20 November 2002

Supervisor's Name: NR LONG

Signature:



Date:

27 November 2003

SUPERVISOR'S DECLARATION

This is to certify that the research carried out for the Doctoral thesis entitled "The Psychological Effects of Peacekeeping Service in Bosnia" was done by Kathryn Audrey Mirfin in the School of Psychology, Massey University, Palmerston North, New Zealand. The thesis material has not been used in part or in whole for any other qualification, and I confirm that the candidate has pursued the course of study in accordance with the requirements of the Massey University regulations.

Supervisor's Name

NIGEL ROBERT LONG

Signature



Date

27 November 2003

CANDIDATE'S DECLARATION

This is to certify that the research carried out for my Doctoral thesis entitled "The Psychological Effects of Peacekeeping Service in Bosnia" in the School of Psychology, Massey University, Palmerston North, New Zealand is my own work and that the thesis material has not been used in part or in whole for any other qualification.

Candidate's Name

KATHRYN AUDREY MIRFIN

Signature



Date

20 November 2002

ACKNOWLEDGEMENTS

Firstly I would like to thank all of the research participants, particularly those who bore with the longitudinal nature of the research.

I would also like to acknowledge the command support for this research, in particular, Major General P. M. Reid, CBE, then Chief of General Staff and Colonel J.B. Vryenhoek, Commander of the Operation Radian II contingent.

I would like to recognise the major contribution of Captain Kerry Eustace (now Major Weston), who typed questionnaires and assisted with distribution and coding, and Mrs Jo Green, who assisted with coding and data entry.

The research design was strengthened by the inclusion of a civilian control group and I would like to acknowledge the help of Mr Crispin Webster, formerly of Telecom NZ Ltd; Ms Shahryn Morse, formerly of BOC Gases Ltd; and Mr Peter Patterson, formerly of Civil Defence, in generating this control group.

I would like to thank my husband, Stephen Newman, for his support, as well as all those people who looked after George so that I could concentrate on my work!

Finally I would like to thank my supervisor, Professor Nigel Long, for his guidance and support.

ABSTRACT

Increasing numbers of military and civilian personnel deploy overseas on peacekeeping duties. Although these are widely acknowledged as stressful, the psychological effects of peacekeeping duties are unclear. Results from previous research in this area are mixed, perhaps because many studies suffer from methodological limitations. This study sought to overcome some of these methodological limitations by utilising a controlled, longitudinal design. The aims of the study were to establish whether there were any changes in mental health (adverse mental health and psychological well-being) as a result of a peacekeeping deployment; to examine possible predictors where changes did occur; to assess the incidence of Post Traumatic Stress Disorder (PTSD) amongst the peacekeepers; to make comparisons with other groups to gain an understanding of the specific stressors of the peacekeeping experience and to develop a measure of the potentially traumatic stressors involved in peacekeeping service. The study examined the mental health status and the nature of the stressors experienced by a group of New Zealand Army soldiers who deployed to Bosnia at four stages of the deployment (pre-deployment, mid-deployment, post-deployment and follow-up). The mental health status of members of three control groups, New Zealand Defence Force (NZDF) personnel who deployed overseas on other than peacekeeping duties, NZ Army personnel, matched with the Experimental Group, who remained on duty in New Zealand, and a group of civilians, was examined at three of these deployment stages (pre-deployment, post-deployment and follow-up). Unfortunately the research suffered from a decline in response rate across the stages of the study, and this limited some of the analyses. Nonetheless, the robust nature of the design allowed some firm conclusions to be made. Results show that peacekeeping service can have an adverse effect on the mental health of those personnel who undertake such duties. Levels of Post Traumatic Stress Disorder (PTSD) and depression symptoms and PTSD "caseness" increased throughout the study for those soldiers who deployed to Bosnia but for none of the control groups. This suggests that these increases were specific to deploying to Bosnia, rather than deploying overseas on other than peacekeeping duties or remaining in NZ in either the NZ Army or the civilian sector. The most stressful time for those who deploy on peacekeeping missions is the follow-up (six months after return to NZ) stage, and to a lesser extent, the pre-deployment stage. A number of stressors were associated with all deployment stages, and some were unique to each deployment stage. The Peacekeeping Exposure Scale (PES) developed in the current study seems a sound measure of the potentially traumatic events involved in peacekeeping service. Experience of some types of these events along with "*post-deployment*" stress are the best predictors of PTSD at follow-up. Recommendations include addressing the specific stressors of each stage, in particular the follow-up and pre-deployment stages, and ensuring that support is available well after the deployment.

TABLE OF CONTENTS

	Page
Acknowledgements	ii
Abstract	iii
Table of Contents	iv
List of Tables	viii
List of Figures	xi
List of Appendices	xiii
 CHAPTER ONE: INTRODUCTION	 1
1.1 New Zealand Defence Force (NZDF) Peacekeeping Role	1
1.2 Stressors Involved in Peacekeeping Service	2
1.2.1 Models of Peacekeeping Stress	4
1.2.2 Peacekeeping Stress Syndromes	7
1.3 Psychological Effects of Peacekeeping Service	8
1.3.1 The Congo (1972 -)	9
1.3.2 Lebanon (1982 -)	10
1.3.3 Cyprus (1992 -)	13
1.3.4 The Sinai/Golan Heights (1994 -)	13
1.3.5 Somalia (1994 -)	15
1.3.6 Former Yugoslavia (1994 -)	18
1.3.7 Haiti (1995 -)	25
1.3.8 Cambodia (1998 -)	27
1.3.9 Kazakstan (1999 -)	28
1.3.10 Rwanda (1999 -)	28
1.3.11 Western Sahara (2001 -)	28
1.3.12 New Zealand Research (1996 -)	29
1.3.13 Belgian Research (1997 -)	30
1.3.14 Dutch Research (1997 -)	31
1.3.15 Finnish Research (2000 -)	31
1.3.16 Australian Research (2001 -)	32
1.3.17 Canadian Research (2001 -)	32
1.3.18 Summary of Previous Research	33
1.3.19 Possible Reasons for Mixed Results	47
1.4 Exposure to Stress	51
1.4.1 Measuring "Exposure" to Peacekeeping Stress	52
1.4.1.1 Desirable Features of a "Peacekeeping Exposure Scale"	55
1.5 Current Research	56
1.5.1 Aims	57
1.5.2 Hypotheses	58
1.5.3 Design	59

1.5.3.1 Research Groups	59
1.5.3.2 Experimental Stages	60
CHAPTER TWO: METHOD	62
2.1 Subjects	62
2.1.1 Experimental Group (EG)	62
2.1.2 Control Group 1 (CG1)	62
2.1.3 Control Group 2 (CG2)	63
2.1.4 Control Group 3 (CG3)	63
2.2 Instruments	63
2.2.1 Socio-Demographic Variables	65
2.2.2 Military Variables	65
2.2.3 Hassles Scale	65
2.2.4 Deployment Hassles Scale	66
2.2.5 Mental Health Inventory (MHI)	66
2.2.6 Hopkins Symptom Checklist – 21 item version (HSCL-21)	67
2.2.7 State-Trait Anxiety Inventory (STAI)	67
2.2.8 Beck Depression Inventory (BDI)	68
2.2.9 Mississippi Scale for Post-Traumatic Stress Disorder (M-PTSD mil)	68
2.2.10 Civilian Version of Mississippi Scale for Post-Traumatic Stress Disorder (M-PTSD civ)	69
2.2.11 Peacekeeping Exposure Scale	70
2.3 Procedure	71
2.3.1 Research Stages	71
2.3.2 Pre-Deployment (Stage 1)	73
2.3.3 Mid-Deployment (Stage 2)	74
2.3.4 Post-Deployment (Stage 3)	74
2.3.5 Follow-Up (Stage 4)	74
CHAPTER THREE: RESULTS	76
3.1 Sample Description	76
3.1.1 Socio-Demographic Information	77
3.1.2 Military Information	80
3.2 Sample Bias	84
3.3 Mental Health Across Deployment Stages	85
3.3.1 Experimental Group (EG)	85
3.3.2 Comparisons with Control Groups	93
3.3.3 Incidence of Post-Traumatic Stress Disorder	104
3.3.3.1 Experimental Group (EG)	105
3.3.3.2 Control Groups	105
3.3.4 Predicting PTSD and Depression	106

3.3.4.1 Predicting PTSD Symptoms	106
3.3.4.2 Predicting Depression	108
3.4 Stressors of the Peacekeeping Experience	109
3.4.1 Daily Hassles	110
3.4.2 Deployment Hassles	119
3.5 Peacekeeping Exposure Scale	123
3.5.1 Factor Analysis	123
3.5.2 Reliability	126
3.5.2.1 Internal Consistency	126
3.5.2.2 Split-half Reliability	126
3.5.3 Multiple Regression Analysis	127
3.5.3.1 PTSD	127
3.5.3.2 Depression	128
3.6 Peacekeeping Stress and Mental Health	128
3.6.1 Inter-Correlations	128
3.6.2 Predicting PTSD Symptoms	129
3.6.3 Predicting Depression	130
 CHAPTER FOUR: DISCUSSION	 131
4.1 Background	131
4.2 Hypotheses	132
Hypothesis 1: That there will be a significant increase in levels of adverse mental health for those personnel who deploy to Bosnia but no change for those personnel who do not deploy to Bosnia (i.e. the Control Groups)	132
Hypothesis 2: That there will be increased levels of PTSD symptoms and incidence of PTSD amongst the personnel who deploy to Bosnia than within any of the control groups	133
Hypothesis 3: That those mental health outcome measures that change significantly across the course of the study will be predicted by daily hassles, deployment hassles and peacekeeping exposure	134
4.3 Mental Health across Deployment Stages	135
4.4 Incidence of PTSD, Depression and other Psychopathology	139
4.4.1 PTSD	139
4.4.2 Depression	143
4.4.3 Other Psychopathology	143
4.5 Predicting PTSD and Depression	145
4.6 Stressors of the Peacekeeping Experience	148

4.7 Peacekeeping Exposure Scale	154
4.8 Daily Hassles, Deployment Hassles and Peacekeeping Exposure as Predictors of Mental Health	157
4.9 Practical Implications	161
4.9.1 Pre-Deployment	162
4.9.2 Mid-Deployment	164
4.9.3 Post-Deployment	166
4.9.4 Follow-Up	168
4.10 Limitations of Current Research and Recommendations for Future Research	169
4.11 Conclusions and Recommendations	170
REFERENCES	172
APPENDICES	186

LIST OF TABLES

	Page
Table 1-1 Summary of literature (research-based and non-research-based) on the psychological effects of peacekeeping deployments	35-45
Table 1-2 Research Design	59
Table 2-1 Deployments included in Control Group 1 (CG1)	62
Table 2-2 Scales used at each Experimental Stage	64
Table 2-3 Peacekeeping Exposure Scale	72
Table 3-1 Number of respondents in each group at each stage of the study ...	76
Table 3-2 Summary of socio-demographic information at Stage 1 of the study ("pre-deployment")	77
Table 3-3 Summary of "civilian" socio-demographic information for Control Group 3 (CG3) at Stage 1 of the study ("pre-deployment")	80
Table 3-4 Summary of military background information at Stage 1 of the study ("pre-deployment") for the Experimental Group (EG) and Control Groups 1 and 2 (CG1 and CG2)	81
Table 3-5 Summary of previous overseas deployment information at Stage 1 of the study ("pre-deployment") for the Experimental Group (EG) and Control Groups 1 and 2 (CG1 and CG2)	83
Table 3-6 The incidence of PTSD for each group at each stage of the study .	105
Table 3-7 Number of stressors (hassles) experienced over the last few days at all stages of the study by members of the Experimental Group (EG)	110
Table 3-8 The ten most frequently reported daily hassles for the Experimental Group (EG) at Stage 1 of the study ("pre-deployment"), along with frequency of these hassles for the Control Groups	114
Table 3-9 The ten most severe daily hassles for the Experimental Group (EG) at Stage 1 of the study ("pre-deployment"), along with severity of these hassles for the Control Groups	114

Table 3-10	The ten most frequently reported and ten most severe daily hassles for the Experimental Group (EG) at Stage 2 of the study (“mid-deployment”)	115
Table 3-11	The ten most frequently reported daily hassles for the Experimental Group (EG) at Stage 3 of the study (“post-deployment”), along with frequency of these hassles for the Control Groups	116
Table 3-12	The ten most severe daily hassles for the Experimental Group (EG) at Stage 3 of the study (“post-deployment”), along with severity of these hassles for the Control Groups	116
Table 3-13	The eleven most frequently reported daily hassles for the Experimental Group (EG) at Stage 4 of the study (“follow-up”), along with frequency of these hassles for the Control Groups	117
Table 3-14	The ten most severe daily hassles for the Experimental Group (EG) at Stage 4 of the study (“follow-up”), along with severity of these hassles for the Control Groups	118
Table 3-15	The ten most frequently reported deployment hassles for the Experimental Group (EG) at Stage 1 of the study (“pre-deployment”), along with frequency of these hassles for Control Group 1 (CG1)	119
Table 3-16	The ten most severe deployment hassles for the Experimental Group (EG) at Stage 1 of the study (“pre-deployment”), along with severity of these hassles for Control Group 1 (CG1)	119
Table 3-17	The ten most frequently reported and ten most severe deployment hassles for the Experimental Group (EG) at Stage 2 of the study (“mid-deployment”)	121
Table 3-18	The ten most frequently reported deployment hassles for the Experimental Group (EG) at Stage 3 of the study (“post-deployment”), along with frequency of these hassles for Control Group 1 (CG1)	122
Table 3-19	The eleven most severe deployment hassles for the Experimental Group (EG) at Stage 3 of the study (“post-deployment”), along with severity of these hassles for Control Group 1 (CG1)	122
Table 3-20	Factors and factor loadings for the PES	125
Table 3-21	Cronbach alpha coefficients and mean item-total correlations for each of the PES factors	126

Table 3-22	Results from multiple regression analyses with PES factors as independent variables and PTSD and depression at follow-up as dependent variables	127
Table 3-23	Factors and factor loadings for the daily hassles and deployment hassles severity scores	129
Table 3-24	Results from hierarchical multiple regression analysis with hassles factors and PES factors “ <i>witnessing unpleasant events</i> ” and “ <i>death or serious injury</i> ” as independent variables and PTSD at follow-up as dependent variable	130

LIST OF FIGURES

	Page
Figure 3-1	85
Mean level of daily hassles at each stage of the study for Experimental Group (EG) respondents (n = 40)	
Figure 3-2	86
Mean level (T Score) of deployment hassles at each stage of the study for Experimental Group (EG) respondents (n = 72)	
Figure 3-3	87
Mean level of Psychological Well-Being at each stage of the study for Experimental Group (EG) respondents (n = 35)	
Figure 3-4	88
Mean level of Psychological Distress at each stage of the study for Experimental Group (EG) respondents (n = 31)	
Figure 3-5	89
Mean level of Total Distress at each stage of the study for Experimental Group (EG) respondents (n = 40)	
Figure 3-6	90
Mean Total PTSD T Score at each stage of the study for Experimental Group (EG) respondents (n = 49)	
Figure 3-7	91
Mean level of State Anxiety at each stage of the study for Experimental Group (EG) respondents (n = 38)	
Figure 3-8	92
Mean level of Depression at Stages 3 and 4 ("post-deployment" and "follow-up") of the study for Experimental Group (EG) respondents (n = 48)	
Figure 3-9	93
Mean level of daily hassles at each common stage of the study for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3)	
Figure 3-10	96
Mean level of deployment hassles (T Score) at pre and post-deployment for the Experimental Group (EG) and Control Group 1 (CG1)	
Figure 3-11	97
Mean levels of Psychological Well-Being at each common stage of the study for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3)	
Figure 3-12	98
Mean levels of Psychological Distress at each common stage of the study for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3)	

Figure 3-13	Mean Total Distress Score at each common stage of the study for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3)	99
Figure 3-14	Mean Total PTSD T Score at each common stage of the study for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3)	101
Figure 3-15	Mean level of State Anxiety at each common stage of the study for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3)	102
Figure 3-16	Mean level of Depression at Stages 3 and 4 of the study (“post-deployment” and “follow-up”) for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3)	103
Figure 3-17	Number of daily hassles for each respondent group at Stage 1 of the study (“pre-deployment”)	111
Figure 3-18	Number of daily hassles for each respondent group at Stage 3 of the study (“post-deployment”)	112
Figure 3-19	Number of daily hassles for each respondent group at Stage 4 of the study (“follow-up”)	113

LIST OF APPENDICES

	Page
Appendix A Pre-Deployment Questionnaire: Experimental Group	186
Appendix B Later Literature on “Exposure”	207
Appendix C Units Represented in the Three Military Groups in the Study	208
Appendix D Sample Bias	209
Appendix E Descriptive Statistics for Variables Represented in Graphs and Analyses in Section 3.3	211
Appendix F Bivariate Correlation Coefficients for Variables included in Multiple Regression Analyses	214
Appendix G Descriptive Statistics for Variables Represented in Factor Analyses	217

CHAPTER ONE

INTRODUCTION

1.1 New Zealand Defence Force (NZDF) Peacekeeping Role

In the last ten years there has been a steady increase in the involvement of New Zealand Defence Force (NZDF) personnel serving in peacekeeping and humanitarian operations around the world. This has often, but not exclusively, been under the auspices of the United Nations (UN).

The first peacekeeping missions in which New Zealand was involved were the United Nations Military Observer Group in India and Pakistan, in which NZDF observers participated between 1952 and 1976, and, from 1954, the still ongoing United Nations Truce Supervision Organisation in the Middle East. New Zealand involvement in international peace support operations has since escalated and Government policy means that it is likely to remain a major focus of the NZDF.

Those servicepeople who serve in countries in need of humanitarian assistance and help to maintain peace for others can themselves find it anything but a peaceful experience. Rather, many of the missions to which New Zealand has contributed personnel have been found to be very stressful. Personnel have experienced various stressors, from such everyday events as difficulties with pay and administrative matters to more intense, or traumatic, stressors like seeing people being injured or killed, or feeling under threat themselves.

These issues were highlighted by the United Nations Iran Iraq Military Observer Group to which New Zealand provided Army observers and air and support crew for an Andover aircraft, between August 1988 and February 1991. These were particularly difficult missions for those personnel involved. Living conditions in Iraq for many personnel were harsh and the observer job involved unpleasant tasks (e.g.

body exchanges) and many frustrations. Diet was sometimes inadequate and observers experienced many restrictions in terms of where they could go (most of the time they were physically locked into teamsites); what they could do (e.g. recreational activities, exercise); services available; and separation from family in New Zealand. As it is UN policy to separate observers from the same country, the New Zealand observers did not have the company of other New Zealanders. Rather, they had to live in close confines with people from varying background, of various cultures and habit. The New Zealand observers served twelve to thirteen months in these conditions, while observers from other countries served for shorter periods (e.g. Australian observers served six months).

It was this mission that lead to the recognition of the stressors involved in peacekeeping duties for NZDF personnel and the first involvement of NZDF psychologists in providing support to personnel who deploy on peacekeeping missions. The level of this support has kept pace with the increased number of peacekeeping missions and now includes pre-deployment training, the provision of information designed to ease returning to New Zealand, post-deployment and in-theatre debriefing, follow-up debriefing, mental health screening and referral to appropriate civilian agencies such as clinical psychologists.

1.2 Stressors Involved in Peacekeeping Service

“The peacekeeping soldier ... represents a physical representation of the world’s effort to maintain international peace and security” (Harleman, 1998, p. 102). This emphasis on maintaining peace and security might lead one to assume that peacekeeping operations would involve less stress than traditional combat duties. However, both the literature and anecdotal evidence from other countries supports the stressful nature of peacekeeping duties experienced by NZDF personnel. In fact, many authors (e.g. Harleman, 1998; Ward, 1997; Litz, Orsillo, Friedman, Ehlich & Batres, 1997b; and Weisaeth & Sund, 1982) argue that the very difference between peacekeeping and combat causes a specific kind of stress. That is, “rules of engagement” that direct that soldiers may only use their weapons if they feel under

threat. This stress associated with peacekeeping duties was considered so unique that Weisaeth & Sund (1982) coined the term “the UN-Soldier’s Stress Syndrome”. It is rather ironic that soldiers on peacekeeping duties appear to have a greater chance of developing harmful stress reactions than they do of being fired upon, physically injured, or killed (Rosebush, 1998).

There is wide agreement that peacekeeping operations are complex, ambiguous and ever-changing compared with combat operations. As Wallenius et al (2002) state, they are psychologically complex and lack “the simple ‘friend-enemy’ relationship that occurs in combat situations” (p. 134). Harleman (1998) discusses how peacekeeping operations now focus on intrastate rather than interstate issues, where more political and humanitarian complexities prevail. For example, dealing with such causes of violent conflict as ethnic, religious and socio-economic factors, with less emphasis on preventing or containing conflicts between nations. Kidwell & Langholtz (1998) discuss the increase in the violence associated with UN peacekeeping missions and suggest that peacekeepers are now less likely to be “observers” in the peacekeeping process, rather they are more likely to become political or criminal targets. Similarly, Downie (2002) discusses how peacekeeping has been extended beyond traditional peacekeeping (monitoring cease-fires and troop withdrawals) through comprehensive peacekeeping (balloting, policing, administering and human rights monitoring) to third-generation peacekeeping (institution building). To further complicate the situation, it is now common for soldiers to deploy on their second, third or even more deployments.

A number of authors have developed models of peacekeeping stress and the Defence Forces of other countries have also developed procedures to manage such stress. The issue was deemed of such importance that Australia, New Zealand, Canada, the United Kingdom and the United States set up a working group on the “Management of Stress in Deployed Operations” in 1995. The purpose of this working group was to identify and participate in areas of collaborative research into managing the effects of stress in deployed operations in both peace (e.g. UN peacekeeping operations) and war (including combat and support personnel) in order to maximise effectiveness, minimise stress casualties, and maximise effective integration of participants on their return to their society, family and jobs.

The United Nations has also recognised stress as a “mission hazard” and has addressed this by providing a range of support procedures (Kidwell & Langholtz, 1998). It seems that the UN response was rather ad hoc with a staff counselor being provided only between 1994 and 1995. However, a number of stress counselors, including three in the field, were appointed in 2000 and the vision is to develop a psychosocial section, with a team of counselors, who are based at headquarters and in the field, with the emphasis being on the prevention of problems (Downie, 2002).

1.2.1 Models of Peacekeeping Stress

The multiple stressors involved in the peacekeeping experience seem to be many and varied and range from everyday concerns such as hassles with mail and administration to more potentially traumatic incidents like seeing someone being injured or killed (Mirfin, 1995). In fact, in 1995 the working group on the Management of Stress in Deployed Operations listed no fewer than 50 stressors, including: dealing with the UN; organisational issues (cohesion, leadership, double standards, micromanagement, communication); host culture; critical incidents; dealing with other peacekeeping force cultures; living conditions/privacy; isolation from family; boredom; goals, timetables, return timings; selection; poor cohesiveness; recreation facilities; expectations and mission outcome information; administration, pay, finance, leave; emotional/sexual deprivation; lack of control over basic resources; restrictions (movement, lifestyle); guilt/frustration of non-included forces; lack of productive work; threat; harassment; expectation of combat; having to engage “enemy”; underemployment - not being credited with full range of skills; culture shock - general; ambiguity of Rules of Engagement; loss of “edge”; lack of adequate training; force mix; media; self medication - prescription drugs and alcohol; risk taking behaviour; issues for stay-behind and advance parties; and casualty management (TTCP/SGU/96/002).

Not surprisingly, a number of authors have tried to organise these into some sort of model. For example, in New Zealand these stressors have been summarised into a number of broad groups: danger or threat of danger to life or safety; witnessing

unpleasant events; the nature of the environment; isolation; family matters (including separation from family and reuniting with family at the end of the deployment); the peacekeeping role itself; the “bigger picture” issues (e.g. the future of the country in which personnel are serving); cultural differences; organisational stressors (e.g. administrative matters); and mental and physical health concerns (including lack of sleep and limited diet). Lundin & Otto (1996) group similar stressors into two major categories: cognitive and emotional stressors, with the latter including “fear and anxiety-producing threats”. Along a similar vein, Kidwell & Langholtz (1998) suggest that there are at least three main areas of stress: job stress, critical incident stress and organisational stress. Similarly, Downie (2002) discusses two categories of “mission stress”: critical incidents (and long-term exposure to critical incidents), and experiences that prevent a complete reintegration after the mission, as well as issues such as the absence of supplies, however minor. She also makes the point that the term “mission stress” is preferable to “operational” or “combat stress” as “peacekeeping by definition does not involve combat and does involve non-military personnel” (p. 9).

Lamerson & Kelloway (1996) also propose a model of peacekeeping stress that does not just incorporate the more traumatic events that can be involved in peacekeeping duties. Rather, they suggest that both traumatic and contextual (i.e. chronic) stressors play an important role in the development of peacekeeping stress. Further to this they propose that contemporary peacekeeping deployments are best characterised as comprising exposure to acute, traumatic stressors in an environment replete with chronic stressors. This conceptual model seems very sound and certainly takes account of the many and varied stressors that have been presented as stressors of the peacekeeping experience. Lamerson & Kelloway (1996) also hypothesise that contextual stressors contribute to individual stress reactions above and beyond the contribution exerted by exposure to traumatic events. Thus, it is a complex picture where management strategies adopted by the organisation assume a very high level of importance. That is, there are a number of stressors that can, and should, be managed by the organisation.

Litz (1996) classifies the stressors associated with four different missions that, he argues, represent a continuum of stressors. These include the “benign, strictly

observer mission” in the Sinai, the buffering role in Lebanon and the “highly dangerous peace-enforcement missions” in Somalia and Bosnia (p. 108). He argues that the recurrent themes of stress may put peacekeepers at risk for lasting psychological dysfunction.

On the other hand, Bartone & Adler (1998) present a range of psychological stressors that vary across the operational phases of a peacekeeping mission. They reduce and summarise these in a conceptually derived model of five underlying dimensions of peacekeeping stress salient to soldier adaptation in peacekeeping operations: isolation, ambiguity, powerlessness, boredom and danger/threat. These dimensions were persistent themes over time during a peacekeeping mission and, Bartone & Adler (1998) argue, need to be understood because individual soldier health as well as mission success depends heavily on how well soldiers adapt to these mission stressors.

A different approach was taken by Britt (1998) who discusses the ambiguities associated with the peacekeeping role within the framework of the “Triangle Model”. He argues that ambiguities serve as unique sources of stress for soldiers on peacekeeping missions (and that these cause soldiers to become disengaged from the mission). He describes how the combined importance of three elements - events, prescriptions and identity – and linkages between these, are crucial in determining how much stress an individual will experience. Examples of events in peacekeeping duties are performance on a check-point and performance on courses designed to familiarise soldiers with local customs. Examples of prescriptions would be rules for how to act with local people, and more personal rules, such as soldiers may believe it is important to help others less fortunate than they. Identity refers to the roles, qualities, characteristics and aspirations a person possesses and, as Britt (1998) points out, identity as a peacekeeper can be different from identity as a soldier. Britt (1998) discusses how peacekeeping stress is experienced when the linkages between these elements are weakened. For example, a prescription-identity link is weakened when soldiers are required to do something they are not trained to do. Examples of things that weaken the prescription-event link on peacekeeping missions are unclear rules of engagement or rules that change, while identity-event links can be weakened when

soldiers feel they do not have personal control over something or are not trained to do a particular requirement of their role.

1.2.2 Peacekeeping Stress Syndromes

A number of authors have coined specific terms to define the reactions that soldiers may have to the specific stressors of the peacekeeping experience, while others have developed classification models. It seems that the first specific term was Weisaeth & Sund's (1982) the "UN-Soldier's Stress Syndrome". Other attempts to label and/or define reactions to peacekeeping stressors have included terms that imply more "normal" responses as well as those that imply maladjustment or psychopathology. For example, Kidwell & Langholtz (1998) suggest that stress reactions in peacekeeping deployment situations can be considered normal - a "natural reaction to an 'unnatural' environment, to prolonged anxiety and vulnerability, as well as to sudden exposure to unexpected violence and threatening events" (p. 94). Scanlon (1996; cited in Rosebush, 1998) uses the relatively neutral term "post-deployment stress syndrome" to represent the variety of symptoms that soldiers experience after a peacekeeping deployment. On the other hand Hall (1996) suggests the term "Deployment Maladjustment" to distinguish peacekeeping stress reaction from combat stress reaction seen in conventional war. "Deployment Maladjustment-Early" refers to those who were diagnosed with major axis I disorders in the initial four to five weeks of the deployment and "Deployment Maladjustment-Late" refers to those who experienced breakdown of interpersonal support systems over later periods of the deployment.

Pearn (2000) goes much further and presents diagnostic features, a summary of the nosological evolution, and key points of differential treatment options for five acute operational stress disorders and for 11 post-traumatic stress disorders. Although all of these can be encountered in the military domain, perhaps the most pertinent of these to the peacekeeping scenario are "acute stress disorder", "counter-disaster syndrome", "peacekeeper's acute stress syndrome", "post-traumatic stress disorder" (PTSD), "post-traumatic depression", "peacekeeper's stress syndrome", "survivor's guilt

syndrome” and “lifestyle and cultural change syndrome”. A discussion of these stress disorders is beyond the scope of this paper, but the fact that such a number of stress syndromes have been described in an attempt to make some sort of sense of the stress reactions of peacekeepers and other military personnel, is testament to the complexity of the issue.

A simpler approach is taken by de Vries, Soetekouw, van der Meer & Bleijenberg (2000), who discuss the similarity of symptoms experienced by their sample of Dutch peacekeeping personnel and those reported in Gulf War veterans. They question names such as “Gulf War syndrome” and advocate a broader nomenclature, namely “veterans syndromes”.

Wallenius et al (2002) developed two interesting models after interviewing Swedish peacekeepers who had served in Bosnia. The first, a descriptive model of acute peacekeeping stress, structures reactions by the type of situation (non-shooting, shooting or duel (sic)), the phase in the course of events (pre-impact, impact or post-impact and personal role in the situation (leader or private)). Such things as personal invulnerability, fear and delayed reactions are general reactions of each phase. The second model is theoretical and looks at the effects of a range of individual factors, situational factors and demands of the peacekeeping role on reactions/cognitive functioning and performance. Wallenius et al (2002) concluded that the reactions mapped in their study corresponded to the general patterns of reactions to danger found in other contexts. However, they uncovered some reactions (e.g. aggressive euphoria, platoon/squad leader’s loss of cognitive control and an illusion of invulnerability) that they maintain had not been discussed in other combat stress or peacekeeping literature.

1.3 Psychological Effects of Peacekeeping Service

These peacekeeping stress syndromes suggest that peacekeeping service can have a detrimental effect on mental health. Certainly, there seems to be little doubt that peacekeeping duties involve many significant stressors, a number of which have long

been recognised as having the potential to cause both short and long-term psychological problems. For example: combat duties, natural and man-made disasters, critical incidents, casualty management, having to engage the “enemy” and threat or danger to life or safety. It is reasonable to hypothesise that exposure to the peacekeeping role, which can involve exposure to events known to have effects on mental health, may also have psychological consequences.

A number of researchers have attempted to discover whether any psychological sequelae are associated with peacekeeping duties. This research is reviewed in the following sections. In general, the research is reviewed by mission location, as comparative research suggests different levels of psychopathology between mission locations (e.g. Litz, King, King, Orsillo & Friedman, 1997a and MacDonald, Chamberlain, Long and Mirfin, 1996). Some studies include subjects from more than one peacekeeping mission and these are reviewed under subjects’ countries.

1.3.1 The Congo

In one of the earliest studies into the psychological effects of peacekeeping service, Kettner (1972) compared 1082 Swedish UN soldiers who were involved in hostilities in the Congo in 1961 with a control group of 1242 Swedish UN soldiers who were not involved in hostilities. The analysis revealed that the “combat veterans” did not differ from the “noncombat veterans” in either psychiatric morbidity after their UN service or reports of alcohol offences. There was, however, a higher accident rate and a lower income status for the “combat” and “non-combat” groups. Kettner (1972) also compared 35 Swedish UN soldiers who suffered from combat exhaustion with a control group (from the same battalion, matched for age and intensity of combat) who did not “break down”. The soldiers who suffered from combat exhaustion were more likely to be younger (under 21), to have parents with a psychiatric history, and to have a lower level of intellect than the control group. Lundin & Otto (1996) later discuss how the military situation (and therefore the stress situation) was different for these soldiers from most later missions – in that veterans of The Congo were directly exposed to, and actively participated in, combat activities.

Almost thirty years later, Singh, Banerjee & Chaudhury (2001) examined the trends of psychiatric disorders among military peacekeeping personnel from 23 different nations admitted to hospital in The Congo between October 1960 and August 1961. The incidence of psychiatric casualties was significantly higher for younger personnel of lower rank and shorter service, who had not experienced war or war-like conditions and who had never left their home country before. The incidence of psychiatric casualties was significantly higher within three months arrival in The Congo. The greatest number of cases were diagnosed with “Anxiety Disorders” or “Hysteria” while a smaller proportion were diagnosed with psychoses or other diagnoses.

1.3.2 Lebanon

A number of studies involve peacekeepers who served in Lebanon. For example, Weisaeth and Sund (1982) set out to explore the “...specific and unique military stress exposure resulting from the UN soldiers police role” (p. 112). They studied the medical records and self-report questionnaires of 2,627 Norwegian personnel who served with the United Nations in Lebanon from 1978 to 1980. Weisaeth and Sund (1982) found that while the level of psychiatric morbidity was low, “mental breakdown, broadly speaking” was the most frequent cause of medical repatriation. As most of these (61.7 percent) had a normal or close to normal pre-traumatic personality, Weisaeth and Sund (1982) suggested that external stress in combination with lack of coping was the main etiological factor. They termed the symptom complex the “UN-Soldier’s Stress Syndrome” (p. 112).

Other interesting findings from Weisaeth and Sund’s (1982) research were that the number of psychiatric diagnoses dropped markedly after the first contingent; alcohol consumption increased while on deployment; there was a higher frequency of reported psychiatric disorder among Western European countries (e.g. Norway, Sweden) than from countries like Senegal and Nepal; and professional soldiers seemed to handle the stress of hostile activities better than volunteering civilians.

Lundin and Otto (1989) studied 421 Swedish medical personnel who worked in a Lebanon hospital between 1982 and 1984. They found that “in spite of very unusual circumstances concerning cultural and social factors and the threat from the surrounding war” (p. 245), stress reactions were not prominent. They thought that living far away from home might be expected to result in a constantly heightened worry about significant others, but it seemed that most UN soldiers seemed to manage quite well. In fact, Lundin and Otto (1989) found that a great many people wanted to continue their UN service for another six-month period.

Other findings from the study were that half of the soldiers had intensive to moderate levels of homesickness and that soldiers of all age groups and both sexes reported an increased consumption of alcohol. For most people, alcohol consumption returned to ordinary levels after their UN service. The authors thought that the increased alcohol intake was probably an effect of its easy accessibility, however, in some cases, this may have been an effect of psychological distress.

Carlstrom, Lundin and Otto (1990) investigated the mental health adjustment of 152 members of a Swedish Logistic Battalion in south Lebanon in 1988. It was hypothesised that subjects who worked in front line roles would be more prone to stress reactions than those who worked in support roles. The study had two major findings. The first, that the adjustment of the respondents to their UN service was good, perhaps due to the effective selection procedures and because of the relative calm that existed before and during the period of assessment. However, a higher incidence of stress symptoms was found in this study than in earlier studies, perhaps due to differences in selection and service conditions. The second major finding was that there was little variation between groups. A considerable number of the respondents reported that the service was monotonous and boring and a relatively high proportion reported a “need to be alone” and feelings of irritability towards comrades. It appeared that after the first period of enthusiasm, UN service became monotonous and this, in addition to the confines of the living situation, appeared to lead to irritability within the unit. There was an increased level of alcohol consumption and it was thought that this may have been related to the monotony of the situation.

In another study of Norwegian personnel (Headquarters Defence Command, 1993) who served in Lebanon, it was found that they were well motivated to the task, had good health, were effected by negative life events to only a small degree and to have a good education. However, when studying those who broke off service early for medical, disciplinary or psychosocial reasons, it was found that they were more likely to have an introverted personality, a lower level of education, and a higher frequency and degree of “burdensome life events” than controls, from the same contingent, company and unit, who had completed service. The study also revealed a considerable increase in alcohol consumption from the pre-service period to the actual tour of duty.

Mehlum (1999) conducted research to further investigate changes in alcohol consumption among Norwegian peacekeepers who had served in Lebanon and explore how these changes could be related to stressful deployment experiences. A total of 43.5 percent of the 888 veterans who completed questionnaires an average of 6.6 years after their deployment to Lebanon reported that their alcohol consumption had increased while on deployment. Mehlum (1999) split the sample into a high and low stress group and found that while only a slightly larger percentage of subjects in the high stress sub-sample reported increased alcohol consumption, significantly more subjects in this group reported potentially pathological reasons for increased drinking (such as anxiety, sleeplessness, tenseness and uneasiness). It is important to note, however, that there was no evidence of long-term or permanent heavy drinking patterns, as levels of post-deployment alcohol consumption were the same as pre-deployment ones.

Dutch personnel who served as peacekeepers in Lebanon have also been the subject of research. Van der beek, Onzevoort & Verkuyl (1989; cited in Weerts et al, 2002) estimated that between 2.5 and 10 percent of veterans might need psychological treatment and found that the closer veterans had been to serious incidents, the more they were in need of treatment. The most important psychological complaints were difficulties adapting to civilian life, depression and aggressive behaviour. Knoester (1989; cited in Weerts et al, 2002) estimated the prevalence of PTSD among Dutch Lebanon veterans as 5 to 10 percent. Another Dutch study, in which peacekeepers completed a questionnaire nine months following the mission, showed that the

transition had been difficult for one-third of the peacekeepers (Willigenberg & Alkemade, 1995; cited in Weerts et al, 2002). Thirty percent reported negative changes in their personal attitude and behaviour, such as somatic complaints, emotional numbing, aggression and tensions, while 3 to 7 percent suffered from serious post-traumatic problems.

1.3.3 Cyprus

Lundin and Otto (1992) duplicated their 1989 research, with a sample of two rifle battalions who served with the UN in Cyprus. They found a very low rate (0.5 percent) of “personal nervous breakdown” and very few reports of psychological or psychosomatic complaints in the short term amongst a sample of 605 soldiers. However, there seemed to be two groups of persons at risk: those who were repatriated and those with high levels of alcohol consumption.

1.3.4 The Sinai/Golan Heights

Personnel who served in the Sinai have also been the subject of research. Harris (1994) describes the deployment of two members of the Walter Reed Army Institute of Research (WRAIR) to the Sinai, in order to document both family and soldier patterns of stress during the deployment of a US Army infantry battalion. Although soldiers faced a number of stressors, there were very few health problems. Aside from a few soldiers who exhibited mild symptoms of depression approximately three months into the mission and irritability approximately five months into the mission, the majority of troops completed their deployments without significant crises. An important point to note is that Harris (1994) established that soldiers who present multiple family problems prior to the deployment are at risk for early repatriation.

Applewhite (1994) endorses the importance of this last point and states that while in the Sinai most of the members of the US 7th Infantry Division who experienced coping problems did so in reaction to family problems back home. Other things

which seemed to lead to increased risk of developing stress reactions were: soldiers who became alienated, soldiers who abused alcohol, and telephone use that resulted in soldiers remaining entangled in disturbing marital relations.

Australian soldiers have also experienced stress in the Sinai (Hamilton-Smith, 1994). In one contingent, a number of soldiers required counseling, two were repatriated to Australia as a result of stress and the remainder managed it in varying ways, like playing sport and keeping fit. Like the US experience, family-related stress was a major consideration and effected almost everybody whether married or single.

The family-related stress caused by deployments was acknowledged by Schumm, Bell & Gade (2000) who endeavoured to determine whether or not the separation caused by a peacekeeping deployment to the Sinai in 1995 reduced marital satisfaction for a sample of 79 soldiers and if satisfaction would return to pre-deployment levels after soldiers returned to the US. Schumm et al (2000) assessed marital satisfaction, quality and stability before, during and after the deployment and found that while there was a moderate decline in marital satisfaction during the deployment there was no overall change in the long-term. Furthermore, there was no change in marital quality. However, marital stability rates did change, particularly for those personnel who had marital troubles before the deployment.

Family factors were considered by Schumm & Bell (2000) in another survey of 466 soldiers who deployed to the Sinai in 1995. They assessed which of a range of plausible pre-deployment factors would be useful predictors of mid-deployment morale, satisfaction with Army life and the effects of family issues on job performance. They suggested that awareness of these factors could ensure more appropriate training and selection. The most important predictors varied somewhat between single and married soldiers with rank consistently being important for married soldiers. Other important variables for married personnel included leaders' support for families and satisfaction with things like pre-deployment information. The latter was important for single soldiers in predicting performance of duty. While few pre-existing factors were significant predictors of the outcome variables, Schumm & Bell (2000) suggest that this is positive because leaders can make a real difference to deployment outcomes, particularly by showing concern about families.

Kodama, Nomura & Ogasawara (2000) attempted to improve the understanding of psychological distress in 80 Japan Self-Defense Forces personnel awaiting possible deployment to peacekeeping duties in the Golan Heights. It seems that the selection process and training for deployment were stressful for all personnel involved, whether or not they then deployed. Furthermore, results showed that while deployed personnel showed more symptoms suggesting somatisation, anxiety and general psychological distress were higher for personnel who were subsequently **not** selected to deploy.

Segal (2001) draws upon on a fourteen year-long research program of field observation, participant observation and individual and group interviews by an interdisciplinary group of researchers to assess whether a mission culture is emerging among US soldiers who are deployed to the Sinai. Although he states that the research program “reflects a “patched-up design” built on a series of opportunistic research projects” (Segal and Segal, 1993; cited in Segal, 2001), the amount of information gathered over such a long period of time affords an excellent opportunity to study this concept. Segal (2001) examines issues such as type of unit deployed, training for deployment, attitude towards peacekeeping as a unit activity, impartiality and organisational issues. He discusses how the majority of soldiers accept the norms and culture of a peacekeeping mission only temporarily, that they do not internalise the peacekeeping role or make it part of their individual identity. It is interesting to note that Segal (2001) also states that it is common for American soldiers who have participated in the Sinai MFO peacekeeping mission to regard it as inappropriate for their unit.

1.3.5 Somalia

Mental health issues arising from peacekeeping service in Somalia have also received attention. For example, Ritchie, Anderson and Ruck (1994) described the deployment of the United States Army 528th Combat Stress Control Unit to Somalia in January 1993 in support of Operation Restore Hope. Ritchie et al (1994) discuss deployment issues, the stresses facing the troops in Somalia and patient data. The unit

had expected to work with service members traumatised by the sight of starving children and dead bodies. However, they found that the stresses were the same as those of low-intensity guerilla warfare. Overall, very few soldiers and marines were impaired by mental health issues and there were minimal psychiatric evacuations from theatre.

Cartwright (1994) describes the deployment, to Somalia, of the 10th (LI) Mountain Division Mental Health Section. A primary function of this unit was to provide individual and group debriefings to all military personnel involved in an incident within their boundaries. Overall mental health statistics were quite low, with a low incidence of serious pathology. Cartwright (1994) speculates that this could be due to proactive efforts to conduct pre-deployment briefings, stress management classes, command consultation, being able to access soldiers in their units, availability of chaplains for counselling, lack of alcohol, lack of telephone contacts, good levels of physical health, good command, leadership, training and cohesion.

Ward (1997 & 1995) studied psychological adjustment in Australian veterans of the United Nations peacekeeping force in Somalia. A questionnaire, comprising of several mental health scales, was administered to 117 Somalia veterans and 77 controls. Veterans of peacekeeping duties in Somalia were found to have significantly higher levels of self-reported psychopathology or psychiatric morbidity than controls 15 months after their return. 24.8 percent of veterans were GHQ "cases" compared with 13.0 percent of controls. Furthermore, PTSD symptoms were reported by 20 percent of veterans. Ward (1997 & 1995) also found that levels of psychopathology were found to be significantly associated with both combat exposure and a pre-military history of treatment for a psychological disorder.

US active duty personnel in Somalia were the subjects of research reported by Litz, Orsillo, Friedman, Ehlich and Batres (1997b). They examined the prevalence of PTSD and the best predictors of PTSD for a sample of 3,461 active duty personnel who had served in Somalia. Eight percent of these personnel were found to meet diagnostic criteria for PTSD approximately five months after their return to the United States. Orsillo, Roemer, Litz, Ehlich & Friedman (1998) later reported that over one-third of these research participants met criteria for psychiatric caseness with the most

commonly reported symptoms being hostility, psychoticism, depression and paranoid ideation. Litz et al (1997b) also found that reports of the generic rewards of military service negatively predicted PTSD, and that the best predictors of PTSD symptom severity were the frequency of exposure to war zone stressors and the degree to which various negative aspects of peace enforcement duty were appraised as frustrating. Of note is the fact that Litz et al (1997b) discuss that while peacekeeping can be stressful for some personnel, it can also be rewarding. For this reason, they also explored the association of more positive things, such as positive aspects of military service and the humanitarian mission, with PTSD.

Litz, King, King, Orsillo & Friedman (1997a) extended the work reported by Litz et al (1997b) in several ways. First, they tested patterns of association among exposure and appraisal variables as well as their direct and indirect effects on PTSD. They also endeavoured to refine key exposure and appraisal variables, created a separate variable termed “pressure to uphold restraint” and addressed the issue of soldiers’ race. For both non-African Americans and African-Americans, they found that traditional combat and negative aspects of peacekeeping were associated with PTSD, frustration with restraint, and positive aspects of peacekeeping, but that restraint was not associated with PTSD. There were discrepancies between the two groups on relationships between restraint, positive aspects and PTSD variables.

Fontana, Litz & Rosenheck (2000) sought to examine the role of sexual harassment or abuse and to determine the degree of similarity between men and women in the etiology of PTSD from traumatic exposure in the peacekeeping role in Somalia. They used structural equation modeling to evaluate and modify a theoretical model for 1307 men and 197 women who had served in the same units in Somalia. They found that severity of PTSD symptoms was impacted directly by exposure to combat for men and indirectly (through fear, sexual harassment and witnessing Somalis dying) for both men and women. That is, the more fear and sexual harassment experienced and the more witnessing of Somalis dying, the more severe the PTSD symptoms.

1.3.6 Former Yugoslavia

The psychological effects of peacekeeping service in the former Yugoslavia for British, Canadian, Dutch, New Zealand, United States and Swedish service personnel have also received attention.

O'Brien (1994) discusses the theory that Bosnia has the makings of a bad war from a psychiatric point of view. It is a civil, ethnic and religious war; goals are not clear; the conflict is prolonged; soldiers are not trained to "do nothing"; and stress is increased by "non-military" tasks such as clearing civilian corpses or casualty handling of young women or children. There is also the danger that people at home in Britain may consider that peacekeepers in Bosnia were not under any stress while, in fact, the stressors may be even greater than those involved in direct conflict.

Deahl, Earnshaw & Jones (1994) discuss what they feel is the potential for serious psychological sequelae from service in the former Yugoslavia. They believe that the nature of the conflict subjected many soldiers to repeated distressing and potentially traumatising events. For example, witnessing atrocities and torture being committed (but being unable to intervene) and the retrieval and disposal of human remains - particularly those of civilians.

On a similar vein, the possible impact of the Bosnian conflict on the health and mental health of New Zealand peacekeeping personnel has also been the subject of speculation (Long, Vincent and Chamberlain, 1995). Long et al (1995) liken the situation in Bosnia to that in Vietnam and believe that the clear link between the adverse long-term mental health and health of soldiers and exposure to combat, extreme violence or grotesque situations suggests that the Bosnian conflict could have similar long-term health effects.

Corelli (1994) discusses how Canadian troops have been involved with the UN in the former Yugoslavia since 1992, and states that when they return to Canada, although they bear no visible wounds, some are scarred for life. Corelli (1994), along with Birenbaum (1994), cites research performed by Lieutenant Commander Greg Possey,

a psychiatric resident. He studied 1300 soldiers who had served in the former Yugoslavia, using questionnaires and personal interviews, and found that 20 percent suffered from either post-traumatic stress disorder (PTSD) or depression.

In further research on the Canadian experience in the former Yugoslavia, Eyre (1994) describes a system specifically designed to collect information about the peacekeeping experience, including the “worst” or most unpleasant thing that happened to people during their tour of duty. Farley (1995) added to this by using the Canadian Forces Stress in Military Operations Questionnaire to study a sample of 408 soldiers deployed on peacekeeping duties in the former Yugoslavia to determine the prevalence and nature of the stressors experienced by army personnel deployed on UN peacekeeping missions.

Farley (1995) found that operational stressors take their toll on the health of soldiers during deployment. The most commonly reported physical symptoms were: cold or flu, headaches, trouble sleeping, aches or pains and feeling overly tired. Not only did physical symptoms (or strain) increase with number of reported stressors, but they also increased with increased time spent in-theatre. It was felt that these “stressor outcomes” could have serious consequences, particularly given the difficult and often dangerous nature of operations, because the resulting manifestation of physical symptoms can degrade work performance and lead to negative psychological states (e.g. poor concentration and depression). Farley (1995) concluded that, while it is unrealistic to suggest that operations could be made stress free, the causes and negative effects of stress could be managed.

Polish peacekeepers have also been the subjects of research. Chilczuk (1998; cited in Weerts et al, 2002) found that 7.3 percent of 152 former Bosnia peacekeepers had PTSD while 45.3 percent had one or more symptoms.

A German study, conducted by Schuffel, Schunk and Schade (1999; cited in Weerts et al, 2002), on 3430 German soldiers who participated in UN and NATO operations in the former Yugoslavia, showed that between 2 and 5 percent showed increased stress reactions at a follow-up stage after their return. These correlated with low “sense of

coherence” before deployment, low unit cohesion during the mission, deployment workload (if cohesion and coherence levels were low) and pre-existing PTSD.

In one of the few prospective studies of individuals involved in peacekeeping service, Bramsen, Dirkzwager & van der Ploeg (2000) investigated the contribution of predeployment personality traits and exposure to traumatic events during deployment to the development of symptoms of post-traumatic stress disorder for a sample of 572 Dutch United Nations Protection Force veterans. Subjects completed a short form of the Dutch version of the MMPI before deployment to the former Yugoslavia. Following the deployment they completed the Self-Rating Form for PTSD (developed by Hovens, van der Ploeg, Bramsen, Klaarenbeek, Schreuder & Rivero, 1994) and a checklist of 13 possible traumatic events experienced during the deployment. Multiple regression analysis showed that the number of stressors during deployment was the most important predictor of PTSD symptom severity, followed by two pre-deployment personality traits – negativism and psychopathology - and finally, age (Bramsen et al, 2000). Whilst they identify a shortcoming of the study to be the possible bias of personality scores as these were collected during the selection procedure, Bramsen et al (2000) argue that the influence of personality scores may be even greater in the later development of PTSD than their data suggested. Personality may influence the way people appraise and attribute meaning to stressful situations and the coping mechanisms they use. They concluded that both pretrauma personality and exposure to trauma are important factors in the etiology of post-traumatic stress symptoms in peacekeeping personnel.

Italian peacekeepers in the Former Yugoslavia have also been the subjects of research. Ballone, Valentino, Occhiolini, Di Mascio, Cannone & Schioppa (2000) evaluated the factors that contribute to stress and the psychological difficulties experienced by 452 Italian peacekeepers who were stationed in Bosnia in 1988. They also studied a control group of 166 Italian soldiers who were stationed in Italy at the same time. There was no increase in stress for the peacekeepers but more than twice the number of peacekeepers said they had “often” experienced items on a stress scale than did members of the control group. Ballone et al (2000) dichotomised the peacekeeper sample into two groups based on stress level and found that unemployment before enlistment, a large family and lack of athletic activity were

significantly associated with stress. While not significant, length of mission and enlisting for economic reasons were also associated with increased stress levels.

Deahl, Srinivasan, Jones, Thomas, Neblett & Jolly (2000) measured the incidence of psychopathology in longitudinal research on a group of 106 British soldiers who had served on peacekeeping duties in Bosnia, as well as investigating the effectiveness of psychological debriefing. A range of scales were administered four times – following the soldiers return to the UK and prior to debriefing (baseline) and at 3, 6 and twelve months. They found a very low level of PTSD and other psychopathology, with only three soldiers developing clinically significant PTSD. There was, however, significant alcohol misuse. Deahl et al (2000) were surprised by these results as they were quite different from research they cited for British soldiers who served in combat missions. For example, they cite the 50 percent incidence of PTSD at one year found by Deahl, Gillham, Thomas, Searle & Srinivasan (1994) for a sample of British soldiers who served in the Gulf War and the 22 percent incidence at five years found by O'Brien & Hughes (1991) for a sample of Falklands veterans. Deahl et al (2000) suggest that high levels of psychopathology are not an inevitable consequence of military trauma and that the different results may reflect differences between peace-keeping duties and combat and/or the effects of an Operational Stress Training package administered to soldiers before deployment to Bosnia. They make several recommendations for future research such as using a broader range of outcome measures and identifying measures that reduce morbidity.

In a further report on these 106 British personnel who returned from peacekeeping operations in Bosnia, Deahl, Srinivasan, Jones, Neblett and Jolly (2001) describe how psychological debriefing demonstrated a positive effect in reducing levels of alcohol misuse. They also found that alcohol misuse was significantly associated with a past psychiatric history and exposure to direct and indirect bombardment during service in Bosnia.

United States military personnel who have deployed on peacekeeping duties to the former Yugoslavia have been the subjects of a range of research. For example, Bartone & Adler (1998) conducted a longitudinal study of 188 members of a US Army unit during its six-month deployment to the former Yugoslavia. Using

interview, observation and survey methods, they identified the main stress factors at various phases of the operation (pre-deployment, early-deployment, mid-deployment and late-deployment) and investigated the relationship between such stressful experiences and two health outcome measures, depression and psychiatric symptoms. They also presented the conceptual model of five stressors discussed in Section 1.2.1. Bartone & Adler (1998) identified that family separation, uncertainty, boredom (in particular insufficient meaningful work and activity) and inability to change things (or powerlessness) as persistent stressors over time. Exposure to these stressors, and others specific to the different phases of the deployment, was found to be strongly related to depression, psychiatric symptoms and morale.

Cohesion, the stigma of post-deployment psychological problems, and deriving benefits from stressful events have also been studied in United States military personnel who served on peacekeeping duties in the former Yugoslavia. Using a longitudinal approach, Bartone & Adler (1999) examined cohesion and key sources of stress over time for 188 personnel in a US Army medical task force that was raised specifically to serve on peacekeeping duties in the former Yugoslavia. Cohesion is an important social influence on soldier morale, performance and stress resistance and was felt to be of particular importance for such a newly-formed unit. Bartone & Adler (1999) found that cohesion levels develop in an inverted-U pattern, starting out low, reaching a high point around the middle of the deployment and then decreasing again at the end of the six-month deployment. They also found that a number of stressors, including situational and home environment stressors, work relationship problems and boredom are negatively related to cohesion. Furthermore, unit climate variables such as confidence and trust in leaders and fellow soldiers, and trust that families are being cared-for, influence cohesion over time.

Weerts et al (2002) cites research conducted by Castro, Bartone, Britt & Adler (1998) and Castro & Adler (1999) on United States peacekeepers who served in Bosnia. It seems that depression and physical symptoms were lower at post-deployment than during the deployment itself. Another interesting finding was that soldiers who deployed to Bosnia for more than four months had worse psychological health (post-traumatic stress symptoms, depression and alcohol problems) than those who deployed for less than four months.

The same results were found in research involving United States soldiers who served in Kosovo. That is, depression and physical symptoms were lower at post-deployment than at mid-deployment (Adler, Dolan, Castro, Bienvenu & Huffman, 2000; cited in Weerts et al, 2002) and those who deployed for more than four months had worse psychological health than those who deployed for less than four months (Wright, Huffman, Adler & Castro, 2001; cited in Weerts et al, 2002). Further results from peacekeeping research on Kosovo veterans show that soldiers who reported more incidents reported more physical and psychological symptoms, greater use of alcohol, more days of work missed due to illness and sleeping less than five hours a night than soldiers who reported fewer incidents (Adler, Dolan, & Castro, in press; cited in Weerts et al, 2002). Another interesting finding was that although contact with the local population could cause problems, soldiers assigned to sites within the local communities reported more awareness of the contribution the deployment made and had a more positive attitude about the mission. (Adler et al, 2000; cited in Weerts et al, 2002).

Britt (2000) examined the stigma associated with psychological problems among 708 United States military personnel who were being screened for psychological and medical problems upon their return from peacekeeping service in Bosnia. He found that admitting a psychological problem is perceived as much more stigmatising than admitting a medical problem and that admitting a psychological problem is perceived as resulting in more stigmatising outcomes than would admitting a medical problem. Furthermore, military personnel are less likely to follow through with a psychological referral than with a medical referral. While Britt's (2000) research does not directly investigate the psychological effects of peacekeeping service, it highlights problems with relying on self-reports of psychological problems following peacekeeping duties. That is, psychological problems may be under-reported and left untreated.

Larsson, Michel & Lundin (2000) evaluated the influence of different kinds of support on mental health following peacekeeping service in Bosnia. Pertinent results for the current study are that 38 of their sample of 510 Swedish soldiers had poor mental health after peacekeeping service and that this seemed to be related more to mental health and sense of coherence before service than to trauma exposure or post-trauma

support. It seems that soldiers with poor mental health after service in Bosnia differed significantly on pre-deployment emotional stability, sense of coherence, and general mental health. They discuss what they thought was a lower level of severe psychological dysfunction than previous studies. The war was over in Bosnia at the time of the study and the level of threat was lower. In addition, most participants were young volunteers who reported a favourable psychological status before departing for Bosnia.

Like Kodama et al (2000), Bolton, Litz, Britt, Adler & Roemer (2001) assessed mental health status of military personnel prior to deployment. Their results highlighted the need to screen for potentially traumatic events (PTEs) prior to a deployment or other PTE as 74 percent of the 2,947 soldiers assessed reported being exposed to at least one PTE. It is interesting to note that most of these did not occur during a previous deployment. Furthermore, approximately 6 percent exceeded screening criteria for PTSD and 43 percent endorsed elevated levels of psychological distress.

The reactions activated in Swedish peacekeeping personnel and the way in which these reactions affect psychological functioning were explored by Wallenius, Johansson and Larsson (2002). Unlike much of the research, which concentrates on long-term, or at least, post-deployment, psychopathological outcomes, Wallenius et al (2002) focus on the immediate effects within the peacekeeping context. That is, they explored reactions to life threatening stressors experienced during deployment and the way these reactions affected performance at the time. They conducted in-depth interviews with 30 Swedish respondents who served in Bosnia and Herzegovina between 1993 and 1995, and found that two factors were associated with lower performance. These were if the life-threatening situation implied loss of control (e.g. if the peacekeepers were in a situation where they could not return fire) or if it demanded complex cognitive activity. However, on the whole, the respondents were generally satisfied with their performance.

Not all research into the psychological effects of peacekeeping service has focused on the more negative outcomes. Britt, Adler & Bartone (2001) acknowledge that peacekeeping duty is both a potential threat and an opportunity, and sought to explore

the relationship between the meaningfulness of work, personality hardiness and deriving long-term benefits from a stressful event. In their longitudinal study of 1953 United States soldiers who had deployed to the former Yugoslavia in support of NATO's peacekeeping force, they conducted an assessment of soldiers mid-way through their deployment and four to five months after their deployment. Their main goals were to examine whether personality hardiness and perceiving meaning in work during the peacekeeping mission would predict deriving benefits from the deployment months after it was over. They found that, although personality hardiness was predictably related to the meaning assigned to work, it was the meaning of work per se that was predictive of deriving future benefits from the deployment. Bartone et al (2001) also found that greater exposure to such things as witnessing the destruction caused by the warring factions was positively related to construing benefits from the deployment. They discuss that this is probably because seeing such things reinforces the need for the military personnel to be there.

1.3.7 Haiti

United States soldiers who served in Haiti have also been the subjects of research. Halverson, Bliese, Moore and Castro (1995) describe how a Human Dimensions Research team deployed to Haiti, following a request from the US Army, to assess the status and adaptation of the US Army force in Haiti. The team spent over one month in Haiti (from November 1994 to December 1994) and collected questionnaires from 3,205 of the approximately 10,500 US soldiers deployed to Haiti at the time. In addition, the team conducted interviews and focus group discussions with 267 soldiers; and conducted content analysis on 2,650 written verbatim comments from 1,250 soldiers.

The results demonstrated that, in general, the soldiers in Haiti did not report elevated levels of psychological distress or increased physical health symptoms. In fact, soldiers who deployed to Haiti reported significantly lower levels of psychological distress compared with soldiers who deployed to either Somalia or the Persian Gulf. Furthermore, soldiers in Haiti reported levels of psychological well-being similar to

both a sample of non-deployed soldiers and soldiers deployed to Kuwait during the same time period.

Despite the fact that overall levels of psychological and physical symptomatology were comparatively low, sub-samples of individuals, companies, and types of units reported elevated levels of psychological distress and physical symptoms. Results indicated that four general factors were significantly related to the well-being of soldiers in Haiti: the operational environment; family separation; work issues; and broader operational issues. Halverson et al (1995) suggest that these results have implications for unit leaders at all levels, mental health and medical personnel, and policy makers.

Hall's (1996) account of the experiences of the 528th Combat Stress Control Center, that served in Haiti between September 1994 and January 1995, suggests quite a different situation, at least for the first 30 days of the deployment. He reports that the initial weeks of deployment were marked by a high rate of major axis I disorders among soldiers presenting for treatment and that there were three suicides during the first 30 days. Hall (1996) states that these results "suggest the possibility of an unusually high level of stress among military persons serving in Haiti" (p. 160).

Hall (1996) suggests that frustrated aggression may have contributed to the increased rate of major axis I disorders and suicide during the early weeks in Haiti. He explains that the mission to Haiti rapidly changed from a combat to a passive posture and discusses how soldiers' training and mental preparation for what they believed would be a combat mission could have lead to heightened aggressive impulses. These could not be expressed in what became a peaceful occupation and Hall (1996) discusses how these impulses were possibly displaced outwardly upon co-workers and inwardly upon the soldiers themselves.

1.3.8 Cambodia

Weerts et al (2002) cites German research that investigated stress among 450 soldiers in a medical unit. Schuffel, Schunk & Schade (1998) found a 2 percent prevalence of PTSD. They also found that increased stress reactions immediately after return and 18 months after return from Cambodia correlated with negativity, stresses prior to deployment, social withdrawal and avoidance. On the other hand, active problem solving, socialisation, increased activity and positive appraisal were protective against stress reactions (Schuffel, Schunk & Schade, 1998; cited in Weerts et al, 2002).

The natural course of symptoms following service in Cambodia for 1721 Dutch servicepersonnel was investigated by de Vries, Soetekouw, van der Meer & Bleijenber (2000) following complaints of severe fatigue, cognitive problems and headaches in Dutch Cambodia veterans in the media. Seventeen percent met the set case definition for symptoms in Cambodia veterans. Percentages of those who met case definition in control groups of Rwanda, Bosnia, on notice to deploy and no-deployment groups were 27.3, 10.8, 3.9 and 2.2 respectively. Post-mission fatigue was predicted by less perceived control over symptoms, more adjustment problems after the mission, less satisfaction with military career, stronger causal attributions to anti-malaria medication and vaccines, more problems at home after deployment and a stronger causal attribution to disease caught in Cambodia.

Questionnaires were completed eighteen months later by 227 subjects who had given permission for follow-up (de Vries, Soetekouw, van der Meer & Bleijenber, 2001). Six percent of the initial sample met the definition for symptoms at this follow-up stage. Further results of interest include 39 percent of the respondents reported partial or full recovery, whereas 61 percent did not report improvement. De Vries et al (2001) discuss how this shows that a considerable number of Cambodia veterans had recuperated, whereas another considerable percentage continued to suffer with severe levels of fatigue and related symptoms. Results of multiple regression analysis suggest that less severe fatigue at follow-up and self-reported improvement were predicted by less severe fatigue at initial assessment and more perceived control over

symptoms. De Vries et al (2001) suggest the results from these two studies highlight the importance of early recognition of symptoms.

1.3.9 Kazakhstan

Britt (1999) examined sources of stress and levels of psychological and physical health among 35 United States servicepersonnel who deployed on a medical humanitarian assistance mission to Kazakhstan in 1996. Results from pre-deployment and mid-deployment surveys showed that subjects underestimated a number of deployment stressors, in particular those concerning feelings of isolation and remoteness and whether or not they felt they would really be able to help the local population. Subjects were also less likely to use more adaptive coping strategies than they had anticipated before they deployed but they reported drinking more alcohol to deal with problems than they had anticipated. In keeping with this, alcohol consumption increased, as did cigarette smoking. However, depression and physical symptoms did not increase during the deployment. Britt (1999) discusses how this could be because subjects felt that what they were doing was worthwhile and that they were making a real contribution.

1.3.10 Rwanda

A Belgian study into the structure of PTSD in Belgian peacekeepers and at risk civilians in Rwanda in April 1994 showed that 5 percent of the military and 15 percent of the civilians had PTSD (Mylle, 1999; cited in Weerts et al, 2002).

1.3.11 Western Sahara

Han & Kim (2001) discuss stressors and psychiatric symptoms reported by 119 military officers who served on a peacekeeping mission in the Western Sahara during August 2000. Nearly a quarter of the peacekeepers, who came from 23 different

countries, reported feeling moderately stressed during the mission by stressors such as climate adaptation, homesickness, physical discomfort, language problems, interpersonal problems and interpersonal conflicts. However, none of the peacekeepers showed signs of clinically significant psychopathic or depressive problems.

Han & Kim (2001) also looked at stress in relation to a range of demographic and other variables (e.g. team size, age, mission duration, number of missions) but found no significant discrepancies.

1.3.12 New Zealand Research

Arguably one of the most comprehensive studies on the psychological effects of peacekeeping service is reported by MacDonald, Chamberlain, Long & Mirfin (1999), MacDonald, Chamberlain, Long, Pereira-Laird & Mirfin (1998), and MacDonald, Chamberlain, Long & Mirfin (1996). A sample of 275 New Zealand Defence Force personnel, who deployed on a variety of missions (Cambodia, Somalia, the Sinai, Iraq, the former Yugoslavia, Angola or the Middle East) between February 1992 and February 1993, either as United Nations Military Observers or as part of a contingent, participated in a longitudinal, cross-sectional study. Self-report data were collected in five stages: pre-deployment, early deployment, mid-deployment, post-deployment (immediately following the deployment) and follow-up (six months after the deployment). Multiple measures of mental health, physical health and stressors were used.

Results showed that the most stressful periods of the deployment, and those with the most impact on overall health and well-being, appear to be the pre-deployment and follow-up stages. More specifically, prior to the deployment, personnel reported higher levels of anxiety and psychological distress. At follow-up, personnel reported higher levels of anxiety and psychological distress and lower levels of positive well-being. In terms of current stressors, levels of daily hassles were consistent over the

study. Deployment hassles, which were highest at pre-deployment, reduced significantly over the course of the deployment.

Interestingly, personnel who deployed to Somalia or Cambodia reported higher levels of daily and deployment stress. Furthermore, those who deployed to Cambodia reported lower levels of self-rated health and those who deployed to Somalia had higher levels of psychological distress, anxiety, depression, and physical symptoms compared with people who deployed to other destinations. Other results included: personnel with longer military service reported higher levels of positive well-being, lower levels of psychological distress and anxiety and lower levels of depression than personnel with less military service.

While results suggest that the incidence of reported psychiatric symptoms was low (with only 1 percent reporting moderate to high levels of PTSD symptoms and other mental health scores being within a “normal” range) they do show that peacekeeping duties have an effect on mental health throughout the deployment. Moreover, MacDonald et al (1999) were able to show that the most important predictor of the overall mental health status of this sample, across the deployment, was level of current stress. That is, general daily hassles, and to a lesser degree, specific deployment-related hassles.

1.3.13 Belgian Research

A large scale Belgian study on the psychological problems of peacekeepers and their significant others is described by Weerts et al (2002). This showed that 15 to 20 percent of peacekeepers experienced serious psychological problems and had difficulty adapting after their return. Wauters (1997; cited by Weerts et al, 2002) found that certain groups were more at risk, including soldiers who were on their second or third deployment.

1.3.14 Dutch Research

Weerts et al (2002) also describe a wide range of Dutch research into the psychological effects of peacekeeping. In a comprehensive study into the health care needs of peacekeeping veterans from a mixture of missions, and their family members, Bramsen, Dirkzwager & van der Ploeg and Dirkzwager, Bramsen & van der Ploeg (1997 and unpublished; cited in Weerts et al, 2002) found a 5 percent probable diagnosis of PTSD for peacekeeping veterans, while 21 percent had one or more symptoms. Veterans of Lebanon, Bosnia (1994-1995) and Cambodia (1992-1993) had significantly higher scores than other veterans. It seems that PTSD symptoms were associated with the number and nature of stressful experiences and the appraisal of the deployment, while risk factors were a lower educational level and being single.

Weerts et al (2002) present a table describing exposure, symptoms and assistance among Dutch peacekeepers, 1991 to 1999. It is interesting that this shows a gradual decrease in frequency and severity of exposure as well as symptoms. “PTSD, complete” rates ranged from 8 percent for a mission to Srebrenica in 1995, through 4.3, 2.6 and 2.0 percent for a mixture of missions in the 1991 to 1996, 1996 to 1998 and 1998 to 1999 periods, respectively.

1.3.15 Finnish Research

Weerts et al (2002) describe the results of Finnish research on UN peacekeepers. Ponteva (2000; cited in Weerts et al, 2002) found that early repatriation from peacekeeping was associated with prior poor economic status and a higher incidence of traumatic deaths following deployment. Prevalence of PTSD was low: 2.7 percent for those who were repatriated and 1.3 percent for those who were not.

1.3.16 Australian Research

Johnston (2001) describes a Post Deployment questionnaire that is routinely administered to Australian Defence Force personnel towards the end of their peacekeeping deployments, and a Mental Health Screen that is completed by those ADF personnel who attend a post-deployment debriefing. The Post Deployment questionnaire consists of two sections. The first asks a series of questions relating to experiences on deployment, while the second consists of a modified version of the Acute Stress Disorder Scale (ASDS). The Mental Health Screen consists of mental health measures and an alcohol abuse scale.

While measures suggest a low rate of PTSD (1.2 percent) for 732 personnel, results indicate that there are clear mental health and organisational health issues that are related to the deployment experience. There was a high rate of alcohol overuse and a high caseness rate on the GHQ12 (9.7 percent “mild” cases and 8.7 percent “severe” cases), although Johnston (2001) points out that the use of this scale in the military is somewhat problematic.

1.3.17 Canadian Research

In 1995 a number of disturbing news reports about Canadian military personnel who committed suicide during or following peacekeeping duties in Bosnia sparked public concern. This caused urgent questions to be asked by policy makers and was the catalyst for Wong, Escobar, Lesage, Loyer, Vanier & Sakinofsky (2001) to investigate the role of peacekeeping duty as a potential risk factor for suicide. No research had been conducted on the relationship of peacekeeping service and suicide prior to Wong et al's (2001) study although they point out that several studies had shown that suicide is generally less frequent in military populations than comparable civilian groups.

Wong et al (2001) investigated all 66 deaths in the Canadian military between 1990 and June 1995 that had been certified as suicides. Twenty-four (36 percent) of these

had experienced at least one 6-month peacekeeping mission. Using two control groups (an unmatched computerised record group which was very similar to the entire military population and a living matched case-control group), Wong et al (2001) compared a range of variables, including psychiatric symptoms, substance abuse, best estimate diagnoses, postings, life event stresses, personality profile and combat/peacekeeping experiences.

They found that while there was an increased risk within the airforce subgroup (explainable, Wong et al discuss, by personal factors not directly related to peacekeeping duties), there was no significant evidence to link peacekeeping duties in the overall military population with suicide. However, Wong et al (2001) point out that some of the narrative inquest reports suggest that in particular instances peacekeeping service generated unique stress which, while not affecting the group as a whole, may have contributed as a negative life event to suicides in vulnerable individuals. They also suggest that peacekeeping stress might exacerbate an underlying psychiatric problem and the effects might persist beyond completion of the posting. Further, that peacekeeping duties may alter perceptions of the value of life and lower thresholds for suicide when confronted by depression or adversity later in life. These hypotheses, Wong et al, 2001 discuss, would apply only to a susceptible minority, not to the group as a whole.

1.3.18 Summary of Previous Research

There is widespread agreement that peacekeeping duties involve a variety of stressors, which range from more chronic, everyday concerns, like hassles with mail, to more acute, potentially traumatic stressors, like seeing people being injured or killed. However, while many authors agree that the peacekeeping experience is stressful, and many others speculate on the ramifications of the peacekeeping experience on the mental health of those involved, results from studies that have examined the psychological impact of such duties have been mixed.

A summary of research reviewed appears in Table 1-1, over. This shows that, although most authors agree that there are definite mental health changes as a result of or throughout a peacekeeping deployment, reported rates of psychopathology, including PTSD, vary considerably.

With respect to PTSD, there appear to be three clusters of reported incidence rate: very low (i.e. around 1 to 2 percent e.g. Weerts et al, 2002; Johnston, 2001; MacDonald et al, 1999, 1998 & 1996); significantly higher (i.e. around 20 percent or higher e.g. Ward, 1997 & 1995; Possey, cited by Corelli, 1994; and Wauters, 1997; cited by Weerts et al, 2002) and low to mid-range (i.e. between 2.5 and 10 percent in Dutch studies by van der Beek et al, 1989; Knoester, 1989; Willigenberg & Alkemade, 1989 and Bramsen et al 1997; cited in Weerts et al, 2002; de Vries et al, 2001).

With respect to more general levels of psychopathology, only five authors (Johnston, 2001; Orsillo et al, 1998; Wauters, 1997 (cited by Weerts et al, 2002); Hall, 1996; and Ward, 1997 & 1995) report high levels after the deployment. Halverson et al (1995) reported that while the whole sample of soldiers did not report elevated levels of psychological distress or increased health symptoms, there were sub-samples of soldiers who did so. It is interesting to note that both Singh et al (2001) and Hall (1996) found higher rates of psychiatric casualties in the early stages of the deployment.

A number of authors have attempted to determine the factors that have lead to either repatriation or changes in levels of PTSD and other psychopathology, even when these changes have been within “normal” levels. The results of such research are very interesting and of much value in terms of providing organisational and psychological support to prevent those personnel who serve on peacekeeping missions suffering any adverse changes in mental health.

As Table 1-1 shows, exposure to stressors, both “war zone” and more chronic everyday stress, were the most common predictors (Weerts et al, 2002; Bramsen et al, 2000; Fontana et al, 2000; MacDonald et al, 1999; Bartone & Adler, 1998; Litz et al, 1997b; Bramsen et al, 1997; cited in Weerts et al, 2002; Ward, 1995 and van der

Table 1-1: Summary of literature (research-based and non-research based) on the psychological effects of peacekeeping deployments

Mission Country/ Author	Incidence of PTSD or other psychopathology	Predictors of PTSD or other psychopathology	Other significant negative issues	Significant positive issues
<i>The Congo</i>				
Kettner (1972)+ (n=1082)	No difference between combat soldiers and non-combat soldiers in psychiatric morbidity or reports of alcohol offences	Soldiers who suffered from combat exhaustion were more likely to be younger (under 21), have parents with a psychiatric history and to have a lower level of intellect than controls	Higher accident rate and lower income status for combat soldiers	
Singh, Banerjee and Chaudhury (2001)		Incidence of psychiatric casualties significantly higher for younger personnel of lower rank and shorter service who had not experienced war or war-like conditions and who had never left their home country before	Incidence of psychiatric casualties significantly higher within three months of arrival	
<i>Lebanon</i>				
Weisaeth and Sund (1982) (n=2627)	Low level of psychiatric morbidity	“Mental breakdown, broadly speaking, was the most common cause of medical repatriation”. External stress in combination with lack of coping was the main etiological factor	Increased alcohol consumption. Stress so specific the term “UN Soldiers Stress Syndrome” was coined.	

Table 1-1: Summary of literature (research-based and non-research based) on the psychological effects of peacekeeping deployments

Mission Country/ Author	Incidence of PTSD or other psychopathology	Predictors of PTSD or other psychopathology	Other significant negative issues	Significant positive issues
<i>The Congo</i>				
Kettner (1972)+ (n=1082)	No difference between combat soldiers and non-combat soldiers in psychiatric morbidity or reports of alcohol offences	Soldiers who suffered from combat exhaustion were more likely to be younger (under 21), have parents with a psychiatric history and to have a lower level of intellect than controls	Higher accident rate and lower income status for combat soldiers	
Singh, Banerjee and Chaudhury (2001)		Incidence of psychiatric casualties significantly higher for younger personnel of lower rank and shorter service who had not experienced war or war-like conditions and who had never left their home country before	Incidence of psychiatric casualties significantly higher within three months of arrival	
<i>Lebanon</i>				
Weisaeth and Sund (1982) (n=2627)	Low level of psychiatric morbidity	“Mental breakdown, broadly speaking, was the most common cause of medical repatriation”. External stress in combination with lack of coping was the main etiological factor	Increased alcohol consumption. Stress so specific the term “UN Soldiers Stress Syndrome” was coined.	

Lundin and Otto (1989) (n=421)	Stress reactions were not prominent		Increased alcohol consumption, intensive to moderate levels of homesickness	Most UN soldiers seemed to manage quite well
Van der Beek, Onzevoort and Verkuyt (1989; cited in Weerts et al. 2002)	Between 2.5% and 10% of veterans might need psychological treatment, with the most important psychological complaints being difficulty adjusting to civilian life, depression and aggressive behaviour	The closer veterans had been to serious incidents, the more they were in need of treatment		
Knoester (1989; cited in Weerts et al, 2002)	Prevalence of PTSD 5% to 10%			
Willigenberg and Alkemade, 1995; cited in Weerts et al, 2002)	Between 3% and 7% suffered from serious posttraumatic tensions.		30% reported negative changes in personal attitude and behaviour, such as somatic complaints, emotional numbing, tensions and aggression	
Carlstrom, Lundin and Otto (1990)+ (n=152)	Higher incidence of stress symptoms in this than earlier studies		Increased alcohol consumption, need to be alone, feelings of irritability, boredom	Overall adjustment was good
HQ Defence Command (1993)	Peacekeepers had good health		Increased alcohol consumption. Those who broke off service early for medical, disciplinary or psychosocial reasons were more likely to have an introverted personality, a lower level of education, and a higher frequency and degree of "burdensome life events" than those who had completed service.	
Mehlum (1999) (n=888)		High stress group reported potentially pathological reasons for increased drinking	Increased alcohol consumption	

Cyprus				
Lundin and Otto (1992) (n=605)	Very low rate (0.5%) of "personal nervous breakdown"	Two groups at risk – those who repatriated and those with a high consumption of alcohol	Increased alcohol consumption	
The Sinai				
Harris (1994)	Very few health problems, few mild symptoms of depression		Irritability approximately five months into mission. Soldiers who present multiple family problems prior to the deployment are at risk for early repatriation	
Applewhite (1994)		Increased risk of developing stress reactions in soldiers who became alienated, abused alcohol and telephone use that resulted in soldiers remaining entangled in disturbing marital relations	Increased alcohol consumption	
Hamilton-Smith (1994)	A number of soldiers required counselling; two were repatriated		Family-related stress a major consideration	
Schumm, Bell and Gade (2000)* (n=79,59,81,69)			Marital stability rates decreased for soldiers who reported their marriage was in trouble before the deployment. Some instability among those with strong marriages before the deployment	Stable marriages can survive 6 month deployments without long-term decrements in satisfaction or quality
Schumm and Bell (2000)* (n=466)				The most important predictors of morale, satisfaction with Army life and effects of family issues on job performance were satisfaction with deployment information and prior satisfaction with Army life. Rank and leaders' support for families were also predictors for married personnel. Leadership was the most instrumental in effecting these outcomes

Kodama, Nomura and Ogasawara (2000)+ (n=80)		More symptoms of somatisation but lower anxiety and general psychological distress for personnel selected to deploy than personnel not selected to deploy		
Segal (2001)			Majority of soldiers accept the culture of a peacekeeping mission only temporarily and regard the mission as inappropriate for their unit	
<i>Somalia</i>				
Ritchie, Anderson and Ruck (1994)	Very few soldiers and marines impaired by mental health issues and minimal psychiatric evacuation from theatre			
Cartwright (1994)	Overall mental health statistics were quite low. Low incidence of serious pathology.			
Ward (1997 and 1995)+ (n=117)	Veterans had significantly higher levels of self-reported psychopathology than controls 15 months after RTA. 20% of veterans reported PTSD symptoms	Levels of psychopathology were associated with combat exposure and a pre-military history of treatment for a psychological disorder		
Litz, King, King, Orsillo and Friedman (1997a) (n=3461)		For both non-African and African Americans, traditional combat and negative aspects of peacekeeping were associated with PTSD, frustration with restraint and positive aspects of peacekeeping		

Litz, Orsillo, Friedman and Batres (1997b) (n=3461)	8% met criteria for PTSD approximately five months after their return	Best predictors of PTSD were frequency of exposure to war zone stressors and the degree to which negative aspects of peacekeeping service were appraised as frustrating.		Can be very rewarding. Generic rewards of military service negatively predicted PTSD
Orsillo, Roemer, Litz, Ehlich and Friedman (1998) (n=3461)	Over 1/3 met criteria for psychiatric caseness, with most commonly reported symptoms being hostility, psychoticism, depression and paranoid ideation	Exposure to traditional war-zone-related stressors was the strongest positive predictor of symptomatology. Low magnitude stressors were predictive of psychiatric distress		General military pride and cohesion was the most powerful protective factor.
Fontana, Litz and Rosenheck (2000) (n = 1307 males, 197 females)		Severity of PTSD was impacted directly by exposure to combat (for males) and indirectly by fear, sexual harassment and exposure to dying Somali people (for males and females)		
<i>Former Yugoslavia</i>				
O'Brien (1994)			Bosnia has the makings of a "bad war" from a psychiatric point of view	
Deahl, Earnshaw and Jones (1994)			Service in the former Yugoslavia has the potential for serious psychological sequelae	
Long, Vincent and Chamberlain (1995)			Liken the situation in Bosnia to that in Vietnam and believe that there could be similar long-term health effects	
Possey, cited by Corelli (1994); Birenbaum (1994) (n=1300)	20% suffered from either PTSD or clinical depression			
Farley (1995) (n=408)	Increased physical symptoms	Physical symptoms increased with time in theatre		

Bartone and Adler (1998)* (n=188, 128, 81)		Exposure to stressors of deployment (including family separation, uncertainty, boredom and inability to change things) was found to be strongly related to depression, psychiatric symptoms and morale	Different stressors at different stages.	
Chilczuk (1998; cited in Weerts et al, 2002) (n=152)	7.3% veterans had PTSD, while 45.3% had one or more symptoms			
Schuffel, Schunk and Schade (1999; cited in Weerts et al, 2002) (n=3430)	Between 2% and 5% veterans had increased stress reactions	Stress reactions correlated with low sense of coherence before deployment, low unit cohesion during deployment, deployment workload and pre-existing PTSD		
Castro, Bartone, Britt and Adler (1998; cited in Weerts et al, 2002) and Castro and Adler (1999; cited in Weerts et al, 2002)		Soldiers deployed for more than 4 months had worse psychological health (post-traumatic stress symptoms, depression and alcohol problems) than those who deployed for less than 4 months	Depression and physical symptoms lower at post-deployment than during deployment	
Bartone and Adler (1999)* (n=188, 128, 81)			Stressors negatively related to cohesion were situational and home environment stressors, work relationship problems and boredom	
Adler, Dolan, Castro Bienvenu and Huffman (2000; cited in Weerts et al, 2002)			Depression and physical symptoms lower at post-deployment than during deployment	Soldiers assigned to sites within local communities reported more awareness of the contribution the deployment made and had a more positive attitude about the mission
Wright, Huffman, Adler and Castro (2001; cited in Weerts et al, 2002)		Soldiers who deployed for greater than 4 months had worse psychological health than those		

		who deployed for less than 4 months		
Adler, Dolan and Castro, in press; cited in Weerts et al, 2002)		Soldiers who reported more incidents reported more physical and psychological symptoms, greater use of alcohol, more days of work missed and sleeping less than 5 hours a night than soldiers who reported fewer incidents		
Bramsen, Dirkzwager and van der Ploeg (2000)* (n=572)		The most important predictor of PTSD symptom severity was the number of stressors during deployment followed by two personality traits (negativism and psychopathology) then age		
Ballone, Valentino, Occhiolini, Di Mascio, Cannone and Schioppa (2000)+ (n=452)	No increase in stress	Unemployment before enlistment, a large family, and lack of athletic or recreational activity were significantly associated with stress	Length of mission and enlisting for economic reasons were also associated with increased stress levels, but were not significant	
Britt (2000) (n=708)			Admitting a psychological problem post-deployment is perceived as much more stigmatising than admitting a medical problem	
Deahl, Srinivasan, Jones, Thomas, Neblett and Jolly (2000)* (n=106)	Very low level of PTSD and other psychopathology		Significant alcohol misuse	

Deahl, Srinivasan, Jones, Neblett and Jolly (2001)* (n= 106)		Alcohol misuse significantly associated with a past psychiatric history and exposure to direct and indirect fire in Bosnia		Reduction in alcohol misuse, accounted for by debriefing
Larsson, Michel and Lundin (2000) * + (n=510)	7.5% had poor mental health after peacekeeping service	Mental health after deployment seemed to be related more to mental health and sense of coherence before service than to trauma exposure or post-trauma support		
Britt, Adler and Bartone (2001)* (n=1953, 161)				Meaning of work predictive of deriving future benefits from the deployment. Greater exposure to things like witnessing destruction positively related to construing benefits from the deployment
Bolton, Litz, Britt, Adler and Roemer (2001) (n=2947)	6% exceeded criteria for PTSD; 43% endorsed high levels of psychological distress prior to deployment		Approx 74% reported being exposed to at least one potentially traumatic event (PTE) prior to deployment	
Wallenius, Johansson and Larsson (2002) (n=30)			Lower performance was associated with life-threatening situations that implied loss of control or demanded complex cognitive activity	
Haiti				
Halverson, Bliese, Moore and Castro (1995) (n=3205)	Soldiers did not report elevated levels of psychological distress or increased physical health symptoms. However, sub-samples of soldiers did			Four general factors were significantly related to well-being: operational environment, family separation, work issues and broader operational issues
Hall (1996)	Increased rate of major axis I disorders and three suicides during first few weeks	Frustrated aggression the cause?		

<i>Cambodia</i>				
Schuffel, Schunk and Schade (1998; cited in Weerts et al, 2002) (n=450)	2% prevalence of PTSD	Increased stress reactions immediately after return and 18 months after return correlated with negativity, stress prior to deployment, social withdrawal and avoidance		Active problem solving, socialisation, increased activity and positive appraisal were protective against stress reactions
de Vries, Soetekouw, van der Meer and Bleijenberg (2000)+ (n=1721)	17% met case definition for fatigue symptoms in Cambodia veterans, and 27.3%, 10.8%, 3.9% and 2.2% in Rwanda, Bosnia, on notice and no-deployment control groups respectively.	Fatigue after deployment predicted by less perceived control over symptoms, more adjustment problems after the mission, less satisfaction with military career and stronger causal attributions to anti-malaria medication, vaccines and disease caught in Cambodia.		
de Vries, Soetekouw, van der Meer and Bleijenberg (2001)* (n=227)	6% met definition for fatigue symptoms at follow-up (18 months after return). 61% did not report improvement since return			Less severe levels of fatigue at follow-up and self-reported improvement were predicted by less severe fatigue and more perceived control over symptoms at post-deployment
<i>Kazakstan</i>				
Britt (1999)* (n=35)	Depression and physical symptoms did not increase during deployment		Increased alcohol and cigarette consumption	
<i>Rwanda</i>				
Mylle (1999; cited in Weerts et al, 2002)	5% military personnel and 15% civilian personnel had PTSD			

Western Sahara				
Han and Kim (2001) (n=119)	No clinically significant psychopathic or depressive patients were noted. 21% reported suffering from moderate stress.			
New Zealand Research				
MacDonald, Chamberlain, Long and Mirfin (1999); MacDonald, Chamberlain, Long, Pereira-Laird and Mirfin (1998); and MacDonald, Chamberlain, Long and Mirfin (1996) * (n=275,186,150,179,154)	Higher levels of anxiety and psychological distress at pre-deployment. Higher levels of anxiety and psychological distress and lower levels of psychological well-being at follow-up. 1% had moderate to high levels of PTSD symptoms. Other mental health scores within "normal" range	Most important predictor of overall mental health status was level of current stress and to a lesser degree, deployment-related stress	Most stressful periods were pre-deployment and follow-up. Personnel who deployed to Somalia and Cambodia reported higher levels of daily and deployment stress	
Belgian Research				
Wauters (1997; cited by Weerts et al, 2002)	15% to 20% of peacekeepers experienced serious psychological problems and had difficulty adapting after their return	Soldiers on their second or third deployment were more at risk		
Dutch Research				
Bramsen, Dirkzwager and van der Ploeg; and Dirkzwager, Bramsen and van der Ploeg (1997 and unpublished; cited in Weerts et al, 2002)	5% probable diagnosis of PTSD; 21% had one or more symptoms	PTSD symptoms were associated with the number and nature of stressful experiences and the appraisal of the deployment. Risk factors were a lower educational level and being single	Veterans of Lebanon, Bosnia (1994-1995) and Cambodia (1992-1993) had significantly higher scores on PTSD scale than other veterans	
Weerts, White, Adler, Castro, Algra, Bramsen, Dirkzwager, van der Ploeg, de Vries and Zijmans (2002)	"PTSD, complete" rates 8% (Srebrenica, 1995), 4.3%, 2.6%, 2.0% (mixture of missions 1991/6, 1996/8, 1998/9)			

<i>Finnish Research</i>				
Ponteva (2000; cited in Weerts et al, 2002)	Prevalence of PTSD 2.7% (repatriated) and 1.3% (not repatriated)			
<i>Australian Research</i>				
Johnston (2001) (n=732)	Low rate (1.2%) of PTSD. High caseness on GHQ12 (9.7% mild, 8.7% severe)		High rate of alcohol overuse	
<i>Canadian Research</i>				
Wong, Escobar, Lesage, Loyer, Vanier and Sakinofsky (2001) (n=66)	No increased risk of suicide in peacekeepers except among a sub-group of airforce personnel.	Airforce personnel at greater risk because of individual factors, isolation from supports and possibly inadequate preparation for deployment	Peacekeeping stress might exacerbate an underlying problem and the effects might persist beyond completion of the posting. May alter perceptions of the value of life and lower thresholds for suicide when confused by depression or adversity later in life for a vulnerable minority	

* = longitudinal research; + = control group of some kind

Beek, 1989; cited in Weerts et al, 2002). On the other hand, Larrson et al (2000) found that poor mental health after deployment seemed to be related more to mental health and sense of coherence before deployment than to trauma exposure. Family problems (Harris, 1994); escape from personal problems as a motive to volunteer for deployment (van der Beek et al, 1989; cited in Weerts et al, 2002); alcohol misuse (Lundin & Otto, 1992); age, rank, length of service and experience (Singh et al, 2001) and unemployment before enlistment, having a large family and lack of athletic or recreational activity during deployment (Ballone et al, 2000) have also been identified as predictive factors. Fontana et al (2000) found fear, sexual harassment and exposure to dying Somali people were indirect factors.

A number of other issues, both positive and negative, emerge from the research. Increased use or misuse of alcohol is reported as a consequence of the deployment experience in many of the studies reviewed (e.g. Johnston, 2001; Deahl et al, 2000; Britt, 1999; Mehlum, 1999; Applewhite, 1994; HQ Defence Command, 1993; Lundin & Otto, 1992, 1989; Carlstrom et al, 1990; and Weisaeth & Sund, 1982). Marital stability rates were found to be low for soldiers who reported their marriage was in trouble before the deployment, and some instability was found for those with seemingly strong marriages before the deployment (Schumm et al (2000). More minor symptoms such as irritability, the need to be alone, and homesickness are also reported by several authors (e.g. Harris, 1994; Carlstrom et al, 1990; and Lundin & Otto, 1989).

Of particular note are the studies that suggest that, rather than being a negative influence on mental health, the peacekeeping experience can be a very positive, rewarding one (e.g. Britt et al, 2001 and Litz et al, 1997b). In fact, Litz et al (1997b) found that the generic rewards of peacekeeping service negatively predicted PTSD. It seems that the ability to see rewards in what can be a stressful experience is related to being able to derive meaning from the experience and that witnessing unpleasant events can actually contribute towards being able to do this (Britt et al, 2001). Weerts et al (2002) also cites research by Adler et al (2000) that suggests that the more contact peacekeepers have with the local community, the more positive are their attitudes about the mission.

1.3.19 Possible Reasons for Mixed Results

The mixed results from previous research into the psychological effects of peacekeeping service may be in part explained by differences between deployment experience and timing, the perceived stigma of admitting psychological problems, the differing selection and support procedures in place and the limitations of the research.

Anecdotal evidence and research (e.g. MacDonald et al, 1999, 1998 & 1996) strongly suggest that peacekeeping missions are different from each other. In fact, even the same mission can provide a completely different experience for personnel who deploy at differing times, for different time periods and/or to various locations within the same mission country. For example, Segal (2001) describes greater acceptance of the MFO peacekeeping mission in the Sinai by soldiers who deployed on later rotations than those who deployed on earlier ones. This may have been due to differences in training, doctrine and expectations that made the rotations a completely different experience. Larrison et al (2000) discuss the fact that the war in Bosnia was over and the level of threat was lower as possible reasons for lower levels of psychopathology. Furthermore, as Bartone & Adler (1998), MacDonald et al (1999, 1998 & 1996), Norwood, Gabbay & Ursano (1997) and Hall (1996) discuss, the deployment experience can change from one phase to another within the same rotation. With respect to deployment length, Weerts et al (2002) cites research by Castro & Adler (1999) and Wright et al (2001) that shows that soldiers who deployed to Bosnia and Kosovo for more than four months had worse psychological health than those who deployed for less than four months.

The mixed results within the research may also stem from the differences between earlier missions, that essentially involved soldiers serving as impartial observers and monitors of a peace process between formerly warring parties, and more contemporary peacekeeping operations that entail more complex, multifaceted duty (Orsillo et al, 1998). This difference in mission goal is also apparent within the same mission. For example, Fontana et al (2000) discuss how the primary goal in Somalia changed from a humanitarian one of bringing food to a starving population and maintaining peace by policing the civilian population to the ousting of one of the

strongest warlords by military means. This affected not only the soldiers' perception of the mission but also their exposure to combat. The issue is even more complicated because it has been shown that soldiers themselves make their own interpretations regarding mission goal. For example, Segal (2001) discusses how the first US troops into the Sinai were told that the mission was to monitor peace between two countries with which the US enjoyed friendly relations. However, they interpreted the mission in terms of the world they had known (that is, that Israel was the traditional friend of the USA).

It is also difficult to compare research findings to gain a clear picture of the psychological effects of peacekeeping service because of the range of selection, training and organisational and psychological support procedures in place for each of the studies. Each nation is responsible for the training, evaluation, selection and screening of the personnel it sends on UN missions (Kidwell and Langholtz, 1998) and this means a complete lack of standardisation in these areas which common sense would suggest would make a real difference to the peacekeeping experience. For example, Deahl et al (2000) suggest low rates of psychopathology could be due to the effects of an Operational Stress Training package administered to soldiers before deployment, and Cartwright (1994) discusses how the low incidence of serious psychopathology could have been due to a range of organisational support mechanisms such as pre-deployment briefings. Furthermore, Carlstrom et al (1990) discuss the way that differing results from their studies could have been due, in part, to differences in selection.

It is not just selection of the individuals who deploy but also of entire units or sub-groups of people that can effect results in this area. For example, Segal (2001) suggests that it may be more challenging for infantry units to adapt to the peacekeeping role. He argues that logistical personnel are likely to be doing the same things on combat and on peacekeeping missions and therefore adapt to the peacekeeping role more easily. Reserve units and full-time units are also likely to have different issues (Segal, 2001; Schumm, Jurich, Stever, Sanders, Castelo & Bollman, 1998). Ethnic background has been shown to effect outcome, with African-American ethnicity being associated with higher levels of PTSD (Fontana et al, 2000).

Fontana et al (2000) and Stretch, Durand & Knudson (1998) also found differences between males and females.

Mixed results may also be related to the self-report nature of almost all of the studies and the possibility that people do not always present a true picture of their difficulties. For example, Britt (2000) found that there was a perceived stigma of admitting psychological problems after a peacekeeping deployment, Han & Kim (2001) suggest that people try to conceal their distress and Wallenius et al (2002) argue that people tend to present a sanitised version of their performance. This may lead to subjects being less likely to answer questionnaires honestly and/or psychological problems being masked by other things e.g. somatisation or alcohol misuse. Security reasons, accessibility to results and the possibility of lawsuits may also prevent a true picture emerging. For example, Singh et al (2001) state that not all information was able to be disclosed for security reasons and Downie (2002) suggests that the UN may be reluctant to have psychological benchmark testing before and after a mission because of the possibility of “mission stress” lawsuits.

One of the other difficulties with gaining a clear picture of the psychological effects of peacekeeping deployments results from the limitations of previous research. Much of the research is retrospective and this limitation may be exacerbated in the area of PTSD, as it has been argued that some kind of psychological processing affects the memory of an emotionally loaded event (Wallenius et al, 2002). In fact, Fontana et al (2000) found a significant increase in reports of traumatic exposure and PTSD symptomatology over time. The low number of longitudinal studies means that it is difficult to get an appreciation of changes in mental health over the deployment and after the deployment, which is arguably the most important phase.

Little account has been taken of pre-deployment history or data and, as Han & Kim (2001) point out, they could not conclude with certainty that reported stress symptoms were consequences of the peacekeeping mission. This is an important point as Bolton et al (2001) found that approximately 74 percent of a sample of 2947 people who were assessed before deployment to Bosnia reported being exposed to at least one potentially traumatic event, 6 percent met criteria for PTSD and 43 percent endorsed high levels of psychological distress. They concluded that it is not only important to

screen for potentially traumatic events when attempting to isolate the rates of PTSD following a specific traumatic incident but also to examine the effects of cumulative exposure to potentially traumatic events. Stretch et al (1998) also found a large number of soldiers had experienced previous traumatic events and that the number of traumatic events experienced was the greatest risk factor for the development of PTSD. The link found by Schuffel et al (1999; cited in Weerts et al, 2002) between stress reactions at a follow-up stage after service in the former Yugoslavia and pre-existing PTSD further highlights the importance of pre-deployment history, as does the finding that soldiers on their second or third deployment are more at risk of developing psychological problems (Wauters, 1997; cited in Weerts, 2002).

In addition, there is little published research that describes the results of controlled studies. That is, studies which compare personnel who deploy on peacekeeping deployments with those who do not deploy or who deploy on non-operational deployments. The latter point is of particular note as Archer & Cauthorne (1986) showed that short-term psychological sequelae can result from a non-operational deployment. Archer & Cauthorne (1986) also found that these can change throughout the course of a non-operational deployment, with personnel within 90 days of leaving or returning reporting higher degrees of “dysfunctionality” on multiple dimensions (e.g. the least positive deployment attitudes, the greatest degree of concern regarding family and children functioning, the greatest sensitivity to emotional distress, an increased number of stress items on a life stress events scale, as well as a tendency to endorse these events as more negatively stressful, and the lowest levels of self-reported job performance).

Other difficulties with comparing the results of previous research in this area are due to the large range of outcome measures that have been used on the one hand, and a somewhat narrow focus on measuring PTSD on the other. Many authors (e.g. Deahl et al, 2001 and Fontana et al, 2000) argue that a broad range of outcomes should be measured and others suggest that PTSD must be defined to reflect those with partial symptoms (e.g. Pearn, 2000 and Passey & Crockett, 1999; cited in Weerts et al, 2002). It seems that a broad range of outcome measures is necessary to try to establish whether any changes in mental health occur as a result of the peacekeeping experience, yet it would be easier to compare the results of different studies if there

was some commonality of scale usage. De Vries et al (2000) also point out a difficulty with the use of different case definitions, while the widespread use of self-report outcome measures might also contribute to difficulties interpreting and comparing results in this area.

As previously discussed, the peacekeeping experience can differ markedly from one situation to another so some sort of common measure of the experience may also help to compare the results of previous research. Levels of stress, both potentially traumatic and more chronic everyday stress, seem to be the most common predictors of psychopathology following peacekeeping service, so it would seem that any attempt to measure the peacekeeping experience should include these.

1.4 Exposure to Stress

It seems that exposure to stress, both potentially traumatic events and more chronic everyday stress, is the most common predictor of psychopathology following peacekeeping service (Weerts et al, 2002; Adler et al, in press; cited in Weerts et al, 2002; Deahl et al (2001); Bramsen et al, 2000; Fontana et al, 2000; MacDonald et al, 1999; Orsillo et al (1998); Bartone & Adler, 1998; Litz et al, 1997b; Bramsen et al, 1997; cited in Weerts et al, 2002; Ward, 1995 & van der Beek et al (1989; cited in Weerts et al, 2002), although Larrison et al (2000) found that poor mental health after deployment was related more to preservice factors than to trauma exposure (or post-deployment support) .

Certainly, research has shown the importance of exposure to the potentially traumatic events involved in combat service in the development of PTSD and other psychopathology for veterans of a range of conflicts including World War II (e.g. Lee, Vaillant, Torrey & Elder, 1995), the Vietnam War (e.g. Macdonald, Chamberlain & Long, 1997; Barrett, Resnick, Foy, Dansky, Flanders & Stroup, 1996; Vincent, Chamberlain & Long, 1994 & Foy, Carroll, & Donohoe, 1987) and more recently, the Gulf War (e.g. Ford, Campbell, Storzbach, Binder, Anger & Rohlman, 2001; Sharkansky, King, King, Wolfe, Erickson & Stokes, 2000; Wolfe, Erickson,

Sharkansky, King & King, 1999; Southwick, Morgan, Darnell, Bremner, Nicolaou, Nagy & Charney, 1995). In fact, combat exposure has been shown to predominate over other factors in predicting PTSD in a wealth of research on Vietnam Veterans (e.g. Prigerson, Rosenheck & Maciejewski, 2002; Donovan, Padin-Rivera, Dowd & Blake, 1996; Fontana & Rosenheck, 1995, 1994 and 1993; Green, Grace, Lindy, Gleser & Leonard, 1990; Breslau & Davis, 1987; Foy & Card, 1987 and Foy, Sippelle, Rueger & Carrol, 1984).

Further to the combat exposure research, it seems that exposure to specific events in the combat environment is more highly associated with the development of PTSD and/or other psychopathology. In particular, participation in or witnessing of atrocities and exposure to grotesque death have been found to present a significant risk (O'Toole, Marshall, Schureck & Dobson, 1999; Beckham, Feldman & Kirby, 1998; Fontana & Rosenheck, 1994; Yehuda, Southwick & Giller, 1992; Green et al, 1990 and Breslau & Davis, 1987) as has handling human remains (Sutker, Uddo, Brailey, Vasterling & Errera, 1994) and exposure to casualties, particularly from the soldier's own country (Adler, Vaitkus & Martin, 1996). Kubany, Abeug, Kilauano, Manke & Kaplan (1997) also found that feelings of guilt correlate highly with PTSD and depression. These specific events have been commonly cited as possible duties of peacekeeping service.

1.4.1 Measuring "Exposure" to Peacekeeping Stress

It would therefore seem important to be able to measure exposure to the potentially traumatic events involved in peacekeeping service to determine if exposure to these events is a predictor of subsequent psychopathology. That is, "peacekeeping exposure". In keeping with the results from previous research and models of peacekeeping stress such as those developed by Lamerson & Kelloway (1996) and Kidwell & Langholtz (1998) it would also seem necessary to measure more chronic stress, including job stress and organisational stress.

However, while more chronic everyday stress can be measured by currently existing “life events” or “minor stresses” scales with known psychometric properties, such as the well-known Social Readjustment Scale (Holmes and Rahe, 1967) and the Hassles Scale (DeLongis, Lazarus & Folkman, 1988) there is no known widely used scale that can provide a reliable and valid measure of the more potentially traumatic events associated with peacekeeping service.

There are, of course, a number of combat exposure scales (e.g. the Combat Exposure Index (Janes, Goldberg, Eisen & True, 1991); the Combat Exposure Scale (Keane et al, 1989); the Military Stress Scale (Watson, Kucala, Manifold, Vassar & Juba, 1988; cited in Watson, Juba & Anderson, 1989) the Objective Military Stress Scale (Solomon, Mikulincer & Hobfoll, 1987); the Combat Exposure Scale (Friedman, Schneiderman, West & Corson, 1986); the Combat Index (Boulanger & Kadushin, 1986), the Combat Exposure Scale (Lund, Foy, Sippelle & Strachan, 1984); and the Vietnam Veterans Questionnaire Combat Exposure Scale (Figley & Stretch, 1980; cited in Keane, Newman & Orsillo, 1997 and Watson et al, 1989). There are also scales that specifically assess exposure to war-time atrocities (e.g. Unger, Gould & Babich, 1998) and war-zone trauma-related guilt (e.g. Kubany et al, 1997). Keane et al (1997) provide a very good review of the scales available within each of four different conceptual approaches: measuring the intensity, frequency and duration of traditional combat experiences; including items outside the realm of traditional combat; evaluating the many generally unpleasant parameters of the military experience (e.g. bad environmental conditions) through specifically designed scales and assessing the individuals emotional appraisal of events.

Little evidence exists as to the psychometric properties of scales in the latter two categories described by Keane et al (1997), although a number of scales in the first two categories have shown good psychometric properties. However, the items and wording render them highly inappropriate for use in the peacekeeping context, which by definition, does not involve combat. That is, they commonly use words like “enemy” and “hostile” which imply that the situation is a combat one, with a defined enemy. An example of such an item is: “Did you ever fire rounds at the enemy?” from Keane et al’s (1989) Combat Exposure Scale. Furthermore, as Keane et al (1997) point out, many were based on the experiences of Vietnam veterans. Issues

such as whether or not servicepersonnel were armed, and thus able to protect themselves, and the quality of life of the local people, including the children, that are widely acknowledged as fundamental to the complex nature of peacekeeping service are often not represented. More chronic everyday stressors, job stress and organisational stress are also not represented.

Attempts to overcome these difficulties in peacekeeping research have ranged from the inclusion of two items to measure “combat” to the use of an adaptation of Keane et al’s (1989) CES, to “purpose-built” scales. These purpose-built scales have almost exclusively been reported after the data from the current study was gathered and thus were unable to be used or modified in the current research.

For example, Fontana et al (2000) used two five-point items to measure “combat” – unit exposure (or the number of times one’s unit was fired upon) and personal exposure (or the number of times one went on patrols or very dangerous duties). They also used an item called “witnessing dying Somalis” that asked how often this occurred. Bramsen et al (2000) asked subjects to indicate whether or not they had experienced 13 possible traumatic events during deployment, such as being held at gunpoint and witnessing human distress, while Larsson et al (2000) asked subjects to indicate whether or not they had been involved in each of six events (such as “any kind of firing very close”) which they experienced as very distressful.

Keane et al’s (1989) CES has been used or adapted by a number of authors. For example, Ward (1997) used Keane et al’s (1989) CES in addition to the Impact of Events Scale (Horowitz, Wilner & Alvarez, 1979; cited in Ward, 1997). By far the most comprehensive approach was taken by Orsillo et al (1998) and Litz et al (1997a & 1997b) who used a five to six item measure of frequency of exposure to war-zone stressors adapted from Keane et al’s (1989) CES, in addition to a 30-item scale of potentially rewarding and frustrating aspects of the peacekeeping experience. The items were derived from preliminary interviews with servicepersonnel who had served in Somalia and media coverage of the events. Subjects were asked to rate the positive and negative impact of these items. A six-factor solution emerged from a principal components factor analysis of this scale (Orsillo et al, 1998). These were frustration with Somalis and Somalia, separation from family and friends, general

military pride, exposure to starvation, exposure to a new culture and restraint/changing rules. When three items with factor loadings less than 0.5 were later removed, these factors accounted for 60 percent of the variance.

None of the approaches taken before the data for the current study was gathered seemed ideal for the purposes of the current study. Many of the scales contained very few items and this means they might not capture the range and specificity of events experienced. Furthermore, it was not until after the data for the current study was gathered that authors attempted to include items that related to more everyday stressors, in addition to the potentially traumatic events (Mehlum, 1999 and research reported by Orsillo et al, 1998 and Litz et al 1997a & 1997b).

As several reliable and valid measures of more chronic, “everyday” stress currently exist, it seemed that these would be ideal, with possibly some modification, for the current study. However, it was necessary to develop a scale to measure the more potentially traumatic aspects of the peacekeeping experience. That is, a “Peacekeeping Exposure Scale”.

1.4.1.1 Desirable Features of a “Peacekeeping Exposure Scale”

Keane et al (1989) state that to be suitable for research a combat exposure scale should be:

- easily administered
- easily scored
- possess sound psychometric properties (internal stability & test-retest reliability)
- have some degree of external validity.

It is reasonable to suggest that these features would also be important for a scale that measures peacekeeping exposure. It would also be important for the scale to be administered immediately after a peacekeeping deployment to minimise the often-reported problems inherent with the retrospective nature of such scales, and for the

scale to provide a possible start-point for future research and development. This means that wording needs to be non-specific to a particular mission or easily adapted to other missions, and to be appropriate for military and civilian personnel.

1.5 Current Research

A controlled, longitudinal study with multiple outcome measures and measures of both potentially traumatic and chronic, everyday stress is the only way to investigate the specific stressors of the peacekeeping experience and determine if any changes in mental health over the course of a deployment can in fact be attributed to the deployment. Within this context it would also be necessary to examine the effects of deployments other than peacekeeping ones, as the literature strongly suggests that many of the difficulties faced by personnel on past missions relate to separation from family and friends, rather than the stress of the deployment per se.

The deployment to Bosnia, of the 250-strong New Zealand Army contingent, provided a good opportunity to conduct such a study and to develop a “Peacekeeping Exposure Scale” to measure the more potentially traumatic aspects of the peacekeeping experience. It also provided the opportunity to utilise control groups.

As much of the stress of peacekeeping deployments seems to be related to separation from family, a control group of personnel who deployed overseas on other than peacekeeping missions was included. Two additional control groups were planned: one of soldiers who did not deploy overseas and the other of civilians.

This controlled, longitudinal design meant that it was not only possible to get a picture of any changes for the soldiers who deployed to Bosnia, but it also meant that it was possible to determine if these changes were unique to being deployed on a peacekeeping mission as opposed to another type of overseas deployment. It would also be possible to determine if any changes were associated with deploying overseas on either a peacekeeping mission or other duties, rather than remaining in NZ.

Furthermore, the inclusion of the civilian control group meant that it would be possible to separate any effects of military service.

1.5.1 Aims

The aims of the current research are:

- a. To examine the psychological effects of peacekeeping service in Bosnia, from “pre-deployment” until a “follow-up” period, six months after the deployment. More specifically, to determine if there are any changes in mental health as a result of deploying on a peacekeeping mission, and to examine possible predictors of any mental health outcome measures that are shown to change as a result of the deployment.
- b. To gain an understanding of the specific stressors, both potentially traumatic and more chronic or “everyday”, involved in peacekeeping service, to develop a “Peacekeeping Exposure Scale” to measure the potentially traumatic stress involved in peacekeeping service, and to examine the relationship between the stressors of peacekeeping service and any changes in mental health that are found to occur as a result of the deployment.

It is hoped that the findings from the research will also be able to be used to refine existing psychological intervention work in the deployment area and make a case to the War Pensions Board for personnel whose mental health is adversely effected by peacekeeping service to be eligible for War Pensions.

1.5.2 Hypotheses

The hypotheses of the current research are:

1. That there will be a significant increase in levels of adverse mental health as a result of the peacekeeping deployment. More specifically, that there will be a significant increase (decrease for psychological well-being) in the following measures for those personnel who deploy to Bosnia, but no change for those personnel who do not deploy to Bosnia (i.e. the Control Groups):
 - a. Psychological Well-Being,
 - b. Psychological Distress,
 - c. Total Distress,
 - d. Post-Traumatic Stress Disorder (PTSD),
 - e. State Anxiety, and
 - f. Depression.
2. That there will be increased levels of PTSD symptoms and incidence of PTSD at "follow-up" for the soldiers who deploy to Bosnia when compared with:
 - a. a control group of soldiers who deploy overseas on other than peacekeeping duties,
 - b. a control group of non-deploying soldiers, and
 - c. a control group of civilians.
3. That those mental health outcome measures that change significantly across the course of the study will be predicted by:
 - a. Daily Hassles,
 - b. Deployment Hassles, and
 - c. Peacekeeping Exposure.

1.5.3 Design

The literature clearly indicated that longitudinal research was needed to properly investigate the mental health effects of peacekeeping deployments. Furthermore, it seemed that previous research had suffered from a lack of control groups. These needed to include not only personnel who did not deploy overseas but also personnel who served overseas on other than peacekeeping deployments. This would help to isolate any stressors caused specifically by being away from home and family for periods of time, as opposed to being away on a peacekeeping deployment.

A longitudinal design, with an experimental group and three different control groups, was used to meet the aims and test the hypotheses of this study. The robust nature of this design overcame the shortcomings of previous research in this area and would hopefully allow more confidence in results.

Questionnaires, comprising of a number of mental health scales, were used to gather data at four stages for the experimental group and three stages for the control groups. The design is presented in Table 1-2 and explained in Sections 1.5.3.1 and 1.5.3.2.

Table 1-2: Research Design.

Stage	Experimental Group ^a	Control Group 1 ^b	Control Group 2 ^c	Control Group 3 ^d
1. Pre-deployment	✓	✓	✓	✓
2. Mid-deployment	✓			
3. Post-deployment	✓	✓	✓	✓
4. Follow-up	✓	✓	✓	✓

1.5.3.1 Research Groups

The following groups were included in the research:

- a. **Experimental Group (EG).** This was the second contingent of New Zealand Army personnel to deploy to Bosnia under the auspices of the

United Nations Protection Force. The contingent deployed to Bosnia from March to September 1995.

- b. **Control Group 1 (CG1).** Control Group 1 (CG1) was a group of New Zealand Defence Force (NZDF) personnel who served overseas during the Bosnian deployment, on other than peacekeeping duties (e.g. on exercises or exchanges). This helped to isolate any stresses caused specifically by being away from home and family for periods of time, as opposed to being away on a peacekeeping deployment.
- c. **Control Group 2 (CG2).** This group comprised military personnel who would **not** deploy overseas while the contingent was in Bosnia, “matched”, as far as possible, with the EG for age, rank, length of service and corps. The inclusion of this group helped to isolate any stresses associated with being away from home and family.
- d. **Control Group 3 (CG3).** Control Group 3 (CG3) was a sample of civilian personnel included to isolate any stresses specific to the military environment.

1.5.3.2 Experimental Stages

The following experimental stages were included in the longitudinal design:

- 1. **Pre-deployment (Stage 1).** This coincided with the “pre-deployment” period for the EG (March/April 1995) for the EG, CG2 and CG3, and one to two weeks before deploying for CG1.
- 2. **Mid-deployment (Stage 2).** At the mid-point of the six-month tour for the EG (June 1995).
- 3. **Post-deployment (Stage 3).** This coincided with the period immediately following the EG’s “Return to New Zealand” for the EG, CG2 and CG3

(September/October 1995) and was within one month of returning to NZ for CG1.

4. **Follow-up (Stage 4).** Six months after the EG's return to NZ for the EG, CG2 and CG3 (March/April 1996) and six months after returning to NZ for CG1.

CHAPTER TWO

METHOD

2.1 Subjects

2.1.1 Experimental Group (EG)

The Experimental Group (EG) consisted of 193 members of the NZ Army contingent who deployed to Bosnia from March to September 1995. Two hundred (of the approximately 250 in total) of these personnel initially completed questionnaires. However, some personnel did not deploy to Bosnia so the number of subjects in this group, at the initial stage of the research, dropped to 193.

2.1.2 Control Group 1 (CG1)

Control Group 1 (CG1) included 62 NZDF personnel who deployed overseas for a period of one month or more on other than peacekeeping missions during 1995. Table 2-1 outlines the deployments included in this group. A total of 64 personnel initially completed questionnaires, but two did not deploy.

Table 2-1: Deployments included in Control Group 1 (CG1).

Exercise	Country	Date of Departure	Date of RTNZ	Number of Respondents
Tasman Link	Australia	21 May 95	6 Jun 95	21
ANZAC Exchange	Australia	31 Mar 95	26 Jun 95	5
Map – Vanuatu	Vanuatu	20 May 95	22 Aug 95	2
Map – Fiji	Fiji	30 Jun 95	15 Aug 95	9
Longlook	England	16 Jul 95	4 Dec 95	14
HMNZS Endeavour (RNZN)	Australia and Singapore	12 Jul 95	3 Nov 95	11
TOTAL				62

2.1.3 Control Group 2 (CG2)

Control Group 2 (CG2) consisted of 112 NZ Army personnel who did not deploy overseas during 1995. This group was “matched” as closely as possible with the EG by age, gender and length of service. Where possible corps was also matched. However, due to the fact that many personnel had either previously deployed to Bosnia or were likely to deploy to Bosnia on the next rotation, it was not possible to find personnel in some corps who could be part of this control group. The Royal New Zealand Armoured Corps (RNZAC) was the most “extreme” case with very few people eligible to be members of this control group. In this situation corps was matched with the most similar corps available (e.g. a “combat” corps was matched with another “combat” corps).

2.1.4 Control Group 3 (CG3)

Control Group 3 (CG3) included 94 civilians drawn from a variety of organisations: Telecom NZ Ltd, BOC Gases, Civil Defence and NZDF Civilian employees. These organisations were thought to be similar to the NZ Army, in that they employed people of similar age in a variety of “trades”. A contact person in each organisation asked for volunteers, ideally male, aged between 18 and 35 years.

2.2 Instruments

A questionnaire was administered to each group at each stage of the study with only the EG receiving the mid-deployment (Stage 2) questionnaire. There were 13 different questionnaires, each of which contained a number of scales and other groups of questions. Table 2-2, over, lists the scales and groups of questions used within each questionnaire.

Table 2-2: Scales used at each Experimental Stage

Scale	Experimental (EG)				Control Group 1 (CG1)			Control Group 2 (CG2)			Control Group 3 (CG3)		
	Pre ¹	Mid ²	Post ³	FUp ⁴	Pre	Post	FUp	Pre	Post	FUp	Pre	Post	FUp
Socio-Demographic Variables	*			*	*		*	*		*	*		*
Military Variables	*				*			*					
Hassles	*	*	*	*	*	*	*	*	*	*	*	*	*
Deployment Hassles	*	*	*		*	*							
Deployment Questions	*	*	*	*	*	*	*						
MHI	*	*	*	*	*	*	*	*	*	*	*	*	*
STAI - State	*	*	*	*	*	*	*	*	*	*	*	*	*
HSCL-21	*	*	*	*	*	*	*	*	*	*	*	*	*
M-PTSD Civilian	*				*			*	*	*	*	*	*
M-PTSD Military			*	*		*	*						
BDI			*	*		*	*		*	*		*	*
PES			*			*							

¹ Pre-deployment

² Mid-deployment

³ Post-deployment (on Return to NZ)

⁴ Follow-up (six months after Return to NZ)

The 13 questionnaires were essentially the same apart from minor changes that reflected the nature of the particular group and stage of the deployment. For example, the military questions and “jargon” were not included in the CG3 questionnaires.

Information about the scales and other questions contained in the questionnaires is provided in Sections 2.2.1 to 2.2.11. A copy of the EG pre-deployment questionnaire, less those scales not available in the public domain, can be found in Appendix A.

2.2.1 Socio-Demographic Variables

Information was sought on participants’ age, gender, marital status, living arrangements, ethnicity, education and income.

2.2.2 Military Variables

Specific military demographics were also requested, for all but CG3, including information on length of service, rank, trade, corps, unit and previous deployment experience. CG3 respondents were asked if they had any previous military experience or any other association with the military.

2.2.3 Hassles Scale

Recent experience of minor stresses was measured by the revised version of the Hassles Scale (DeLongis, Lazarus and Folkman, 1988). Respondents are asked to indicate, on a four-point scale, to what extent each of 53 items was a hassle for them *over the last month*. The items reflect a variety of everyday concerns including finances, family, work, health, environmental activities, social activities and practical considerations. The scale has been found to have reasonable reliability with Lu (1991) reporting an alpha coefficient of 0.71 and has been used previously with similar samples. For example, NZDF peacekeeping personnel (MacDonald et al,

1999, 1998 & 1996), NZ Army personnel (Alpass, Long, MacDonald & Chamberlain, 1996) and NZ Vietnam Veterans (Vincent et al, 1994).

2.2.4 Deployment Hassles Scale

A number of hassles relating specifically to the deployment situation were also included, in an attempt to measure the more “everyday” or “contextual” stressors of the peacekeeping experience. These questions were developed for previous research (MacDonald et al, 1999, 1998 & 1996) using information obtained from debriefs of peacekeeping personnel who had returned from peacekeeping duties, published research (e.g. Archer & Cauthorne, 1986) and unpublished papers. Item format was identical to that of the Hassles Scale.

2.2.5 Mental Health Inventory (MHI)

The 38-item Mental Health Inventory (Veit and Ware, 1983) was used to measure mental health. Developed for use in general populations, the Mental Health Inventory (MHI) measures general psychological distress and well-being. The MHI can provide a global score for mental health, two scores for psychological well-being and psychological distress; or, for more in-depth study, the MHI can be broken down into five factors: anxiety; depression; emotional ties; general positive affect; and loss of emotional or behavioural control. Respondents are asked to rate, on a five point scale, how frequently they experienced each of the 38 statements relating to aspects of mental health *over the last month*. Veit and Ware’s (1983) measures of internal consistency ranged from 0.83 for the five lower factors to 0.96 for the overall mental health score. This scale has been previously used with NZDF peacekeeping personnel (MacDonald et al, 1999, 1998 & 1996), NZ Vietnam Veterans (e.g. Vincent et al, 1994) and NZ Army personnel (Alpass et al, 1996). The psychological well-being and psychological distress scores were used in the current study.

2.2.6 Hopkins Symptom Checklist - 21 item version (HSCL-21)

Psychological distress at the time of the survey was measured using the 21-item version of the Hopkins Symptom Checklist (HSCL-21) (Green, Walkey, McCormick, & Taylor, 1988). In addition to a Total Distress Score, scores on three sub-scales (General Feelings of Distress (GFD); Somatic Distress (SD); and Performance Difficulty (PD)) can also be obtained. Subjects are asked to report how distressing they found each of the 21 items, on a four point scale from 1 (not at all) to 4 (extremely), over the *past seven days*. The HSCL-21 has good psychometric properties with Green et al (1988) reporting alpha reliability coefficients for a sample of students and nurses which ranged from 0.75 to 0.86 for the three subscales and 0.90 for the total score. Deane, Leatham and Spicer (1992), using clients referred for psychotherapy as outpatients in two New Zealand hospitals, found comparable results with Cronbach alphas ranging from 0.80 to 0.87 for the subscales and 0.89 for the Total Distress score. Deane et al (1992) also reported that the HSCL-21 was able to distinguish significantly between clinical patients and nurses. The HSCL-21 has been normed on New Zealand subjects so is particularly suitable for use in New Zealand research. Only the Total Distress score was used in the current study.

2.2.7 State-Trait Anxiety Inventory (STAI)

Subjective anxiety was measured using the state anxiety scale of the State-Trait Anxiety Inventory (STAI) (Spielberger, 1983). The STAI, which comprises separate self-report scales for measuring state and trait anxiety (S-Anxiety and T-Anxiety), has been used extensively in research and clinical practice. The S-Anxiety scale (STAI Form Y-1) consists of twenty statements that evaluate apprehension, tension, nervousness and worry by asking how respondents feel "*right now, at this moment*". Scores on this scale have been found to increase in response to physical danger and psychological stress and decrease as a result of relaxation training (Spielberger, 1983) and should, therefore, be particularly relevant for the deployment situation. Spielberger (1983) reports good normative data from working adults, college students, high school students and military recruits, with reliability coefficients ranging from

0.90 to 0.94. He also reported a Cronbach alpha of 0.93 for the S-Anxiety scale. This scale has been used in previous research with NZDF peacekeeping personnel (MacDonald et al, 1999, 1998 & 1996) and NZ Army personnel (Alpass et al, 1996).

2.2.8 Beck Depression Inventory (BDI)

The revised Beck Depression Inventory (BDI) (Beck, Ruch, Shaw & Emery, 1979) is a 21-item instrument designed to assess the severity of depression in adolescents and adults. It is one of the most widely accepted instruments in clinical psychology and psychiatry for assessing the intensity of depression. Furthermore, it is a reliable scale which is sensitive to changes over time. It is reported to have high internal consistency in both clinical and non-clinical populations with Cronbach alphas ranging from 0.79 to 0.90. Beckham and Leber (1985) reported that test-retest reliability ranges from 0.69 to 0.90, split-half reliability from 0.58 to 0.93 and concurrent validity from 0.62 to 0.77. The BDI has been used in previous research with similar groups e.g. NZDF peacekeeping personnel (MacDonald et al, 1999, 1998 & 1996), NZ Vietnam Veterans (Vincent et al, 1994) and NZ Army personnel (Alpass et al, 1996). Due to response regarding permission to reproduce this scale being delayed, the BDI could unfortunately only be used for Stages 3 (post-deployment) and 4 (follow-up) of the current study.

2.2.9 Mississippi Scale for Post-Traumatic Stress Disorder (M-PTSD mil)

The Mississippi Scale for Post-Traumatic Stress Disorder (M-PTSD), developed by Keane, Caddell & Taylor (1988), was used to assess the incidence of PTSD. The original 35-item M-PTSD scale, in which subjects rate how true each item is for them on a five-point Likert scale, was developed from the Diagnostic and Statistical Manual of Mental Disorders criteria for PTSD (Keane et al, 1988). Scores are summed to provide a continuous measure of PTSD severity (or symptoms) and a cutoff point is used as a diagnosis for PTSD. Keane et al (1988) reported that the scale

had acceptable psychometric properties with good internal reliability (alpha coefficient of 0.94), good test-retest reliability (0.97) and a very good overall “hit” rate for diagnostic accuracy (in the 90% range). McFall, Smith, Mackay and Tarver (1990) examined the reliability and validity of the M-PTSD and found high internal reliability (Cronbach alpha coefficient of 0.96), and excellent discriminant and convergent validity. In the current study, the M-PTSD was used in all questionnaires which were administered after a deployment (i.e. post-deployment and follow-up questionnaires for the EG and CG1). Slight changes were made to the wording of 11 items so that they focused specifically on the deployment, rather than subjects’ general military careers. For example, “Being in certain situations makes me feel as though I am back in the military” became “Being in certain situations makes me feel as though I am back on the deployment”. The M-PTSD has been used in previous relevant research on NZ samples, for example, NZDF peacekeeping personnel (MacDonald et al, 1999, 1998 & 1996) and NZ Vietnam Veterans (Vincent et al, 1994).

2.2.10 Civilian Version of Mississippi Scale for Post-Traumatic Stress Disorder (M-PTSD civ)

A civilian version of the M-PTSD (M-PTSD civ) was also used in the study. This differs from the military version in the wording of the questions, for example, “I do not feel guilt over what I did in the military” becomes “I do not feel guilt over things I did in the past”. In addition there are four new items in the civilian version, making it a 39-item scale. The addition of the new items means that cutoff scores have to be adjusted to allow for the higher possible total. The M-PTSD civ was used in the questionnaires not listed above. Total scores were converted to T scores for all analyses involving the comparison of M-PTSD mil (M-PTSD military version) and M-PTSD civ scores. This meant that scores on both scales could be compared even though they contained a different number of items.

2.2.11 *Peacekeeping Exposure Scale (PES)*

The Peacekeeping Exposure Scale (PES) was developed specifically to measure the level of potentially traumatic stress experienced by service personnel throughout their peacekeeping mission. Development of the scale occurred in several stages.

Stage 1. First, items were generated from information gained from debriefs, conducted by the author, of NZDF personnel who returned from peacekeeping duties between March 1990 and August 1992. A number of stressful events and experiences were described in these standardised debriefs. These were grouped according to the type of event. Items that reflected the major stressors experienced were then written. The response format was similar to that used in established combat exposure scales (e.g. Boulanger & Kadushin, 1986 and Keane et al, 1989). Subjects are asked to indicate how often they experienced each event *during their deployment* on a scale ranging from 0 “never” to 5 “very often”.

Stage 2. The next stage involved reference to the literature, in particular, combat exposure scales and specific events that had been shown to contribute to PTSD and other psychopathology, to ensure that all important events or experiences were covered. For example, research suggested that it was important to include items relating to body handling (Sutker et al, 1994), and exposure to atrocities (Fontana & Rosenheck, 1994; Yehuda et al, 1992; Green et al, 1990 and Breslau & Davis, 1987) as these have been found to be highly associated with the development of PTSD. It was felt that the items generated during Stage 1 covered these experiences.

Further important literature on combat exposure scales and events highly associated with the development of PTSD has been published subsequent to the data being gathered in the current study. This was therefore unable to be considered in the design of the PES. However, due to the relevance of the information, a summary of this later literature can be found in Appendix B.

Stage 3. The third stage was a pilot of the resulting scale in previous research involving NZDF personnel who deployed on peacekeeping missions (MacDonald et

al, 1996). A total of 277 personnel completed the PES as part of a larger questionnaire. It appeared that the PES was easy to complete, with sound face validity.

Stage 4. The fourth, or final stage, involved review by members of an international working group on the Management of Stress in Deployed Operations. This stage saw the number of items in the PES increase from 19 in the pilot version to 20 in the current version. The item in the pilot version of the PES: “How often did you handle bodies or treat casualties?” was split into two items for the current study, as it was recognised that the two events combined in the original item were, in many cases, quite independent of each other.

The PES is presented on the following page.

2.3 Procedure

2.3.1 Research Stages

Questionnaires were administered to subjects at the following stages:

Pre-deployment (Stage 1). All groups.

Mid-deployment (Stage 2). EG only.

Post-deployment (Stage 3). All groups.

Follow-up (Stage 4). All groups.

Table 2-3: Peacekeeping Exposure Scale

Listed below are a number of things that you may have experienced during your recent deployment. Circle the number for the one answer that best indicates how often you experienced each situation during your deployment.

During the deployment how often did you experience each of the following?

0	1	2	3	4	5
Never	very	rarely	sometimes	often	very
Or	rarely				often
not applicable					

How often ...

did you experience local unrest (riots, hostility toward you, etc)?0 1 2 3 4 5

did you fear for your life or personal safety?0 1 2 3 4 5

did you witness a disturbing scene or incident?0 1 2 3 4 5

did you see people suffering severe illness /
starvation /mutilation?.....0 1 2 3 4 5

were you bothered by incidents involving children?0 1 2 3 4 5

were you bothered by the quality of life of the local people?0 1 2 3 4 5

How often ...

were you bothered by feeling responsible for the
safety of other people?0 1 2 3 4 5

did you witness someone being killed or seriously injured?0 1 2 3 4 5

were other UNPROFOR personnel killed or seriously injured?0 1 2 3 4 5

did you handle bodies?0 1 2 3 4 5

did you treat casualties?0 1 2 3 4 5

were you in an area receiving sniper or small arms fire?0 1 2 3 4 5

were you exposed to an NBC threat?0 1 2 3 4 5

were you armed?0 1 2 3 4 5

did you fire your weapon?0 1 2 3 4 5

did you encounter artillery or mortar fire?0 1 2 3 4 5

How often ...

did you encounter mines, bombs or booby traps?0 1 2 3 4 5

were you ambushed, detained or threatened with a weapon?0 1 2 3 4 5

did you feel that your freedom was restricted?0 1 2 3 4 5

were you bothered by your living conditions?0 1 2 3 4 5

2.3.2 Pre-Deployment (Stage 1)

“Pre-deployment” questionnaires were administered as follows:

Experimental Group (EG). Questionnaires were administered to the contingent, by the researcher, on the last day of their combined pre-deployment training in Waiouru on 28 February 1995.

Control Group 1 (CG1). Administration of questionnaires to CG1 participants was “face-to-face” for some groups of respondents and “by mail” for others, one to two weeks before the date they were due to leave New Zealand. An attempt was made to include Royal New Zealand Navy (RNZN) personnel in the study, to increase the number of subjects in this control group. These questionnaires were administered by mail by the Senior Navy Psychologist.

Control Group 2 (CG2). Two hundred and fifty-three questionnaires were mailed to potential CG2 members as soon as possible after the administration of the EG pre-deployment questionnaire. However, as stated earlier, identifying personnel for inclusion in this control group proved difficult, as many personnel had either already deployed on peacekeeping missions, or were likely to deploy with the next contingent. The need to ensure that personnel who would later deploy to Bosnia were not included in this control group meant that the majority of people to whom questionnaires were sent were from one particular unit.

Control Group 3 (CG3). Letters were sent to contact people in Telecom, BOC Gases and Civil Defence Headquarters in Auckland asking for participants, ideally males between 18 and 35 years of age, for inclusion in the civilian control group (CG3). It was considered appropriate for the members of this control group to be employed and these particular organisations were selected as they had employees who worked in a range of different roles (as in the Army). Each organisation chose a slightly different method to request participation, to ensure the maximum level of privacy for potential respondents. For example, BOC Gases personnel were asked to contact the researchers directly if they were interested in participating, questionnaires

were distributed by a contact person for Telecom personnel and Civil Defence provided researchers with a list of personnel who wished to participate. To try to increase numbers in this group questionnaires were also sent to NZDF civilian employees who met the criteria outlined above.

2.3.3 Mid-Deployment (Stage 2)

Mid-deployment questionnaires were sent to the EG only, in June 1995. All questionnaires were placed in individually addressed envelopes and sent to Bosnia on a re-supply flight. The questionnaires were distributed and collected by the contingent Chief Clerk.

2.3.4 Post-Deployment (Stage 3)

“Post-deployment” questionnaires were administered as follows:

Experimental Group (EG). These were administered, in Bosnia, by Army psychologists immediately following post-deployment debriefs.

Control Group 1 (CG1). Post-deployment questionnaires were mailed to CG1 subjects within one month of their return to NZ.

Control Groups 2 and 3 (CG2 and CG3). Post-deployment questionnaires were mailed to CG2 and CG3 subjects within one month of the EG’s return to NZ, in October 1995. Reminder letters were mailed to those subjects who had not returned their questionnaires by December 1995.

2.3.5 Follow-Up (Stage 4)

“Follow-up” questionnaires were administered as follows:

Experimental Group, Control Groups 2 and 3 (EG, CG2 and CG3). Follow-up questionnaires were mailed to all EG, CG2 and CG3 subjects who had completed the pre-deployment questionnaire and had not subsequently withdrawn from the study. (It was hoped that some participants who had not completed the post-deployment questionnaire would complete the follow-up questionnaire, increasing the available data.) The questionnaires were mailed at the end of March 1996, approximately six months after the EG's return to NZ.

Control Group 1 (CG1). Follow-up questionnaires were posted to all CG1 subjects who had completed the pre-deployment questionnaire, approximately six months after their return to NZ.

CHAPTER THREE

RESULTS

3.1 Sample Description

Table 3-1 presents the number of respondents in each group who completed questionnaires at each stage of the deployment. As Table 3-1 shows, 461 people completed the first, or “pre-deployment”, questionnaire. However, despite sending reminder letters, the numbers of respondents completing subsequent questionnaires dropped markedly. Unfortunately this is common in longitudinal research, especially when it involves a number of questionnaire administrations and takes place over an extended period of time. People can become less interested in the research and can also be more difficult to contact. They often move locations within the military and even though respondents were asked to inform the researchers if they changed address within the period of the study, it was apparent that many did not do so. It seems that a number also left the military and this made them even more difficult to contact.

Of the 200 original respondents in the Experimental Group (EG) and 64 in Control Group 1 (CG1), 193 and 62 respectively deployed overseas. Only those EG and CG1 respondents who subsequently deployed overseas were included in the EG and CG1 analysis from this point.

Table 3-1: Number of respondents in each group at each stage of the study.

	Number of respondents				Total
	EG	CG1	CG2	CG3	
Pre-deployment (Stage 1)	193 (200)	62 (64)	112	94	461
Mid-deployment (Stage 2)	129	-	-	-	129
Post-deployment (Stage 3)	97	38	75	79	289
Follow-up (Stage 4)	67	34	69	75	247

3.1.1 Socio-Demographic Information

Socio-demographic information for all personnel included in subsequent analyses are presented in Table 3-2.

Experimental Group (EG). Age for members of the EG ranged from 18 years, three months to 43 years, three months, with the mean age being 26 years, three months. Most (98.4%) of the respondents were male, with only three females in the EG. Almost half (48.7%) were single at Stage 1 of the study, while 40.7% were married or in a recognised relationship. Most (54.5%) EG respondents lived with other adults,

Table 3-2: Summary of socio-demographic information at Stage 1 of the study (“pre-deployment”).

	Number (percentage) of respondents			
	EG	CG1	CG2	CG3
Age				
Under 20	9 (5.0)	2 (3.4)	7 (6.3)	1 (1.1)
20 to 24	66 (36.5)	18 (31.0)	33 (29.7)	14 (14.9)
25 to 29	70 (38.7)	13 (22.4)	42 (37.8)	10 (10.6)
30 to 34	24 (13.3)	15 (25.9)	21 (18.9)	20 (21.3)
35 to 39	9 (5.0)	6 (10.3)	5 (4.5)	20 (21.3)
40 & over	3 (1.7)	4 (6.9)	3 (2.7)	29 (30.9)
<i>Mean</i>	26.29	28.96	27.18	35.79
Gender				
Male	185 (98.4)	59 (96.7)	99 (88.4)	68 (72.3)
Female	3 (1.6)	2 (3.3)	13 (11.6)	26 (27.7)
Marital Status				
Single	92 (48.7)	22 (36.1)	38 (33.9)	21 (22.3)
Engaged/ Long-term r'ship	13 (6.9)	3 (4.9)	9 (8.0)	5 (5.3)
Married/Recognised r'ship	77 (40.7)	32 (52.5)	63 (56.3)	60 (63.8)
Separated/Divorced	7 (3.7)	4 (6.6)	2 (1.8)	4 (8.5)
Widowed	-	-	-	-
Family Composition (Living ..				
With Partner	31 (16.4)	10 (16.4)	23 (20.5)	22 (23.4)
With Partner & Children	50 (26.5)	22 (36.1)	36 (32.1)	43 (45.7)
With Children, no Partner	-	-	-	1 (1.1)
Alone	3 (1.6)	3 (4.8)	-	9 (9.6)
With other adults (barracks,flat)	103 (54.5)	26 (42.7)	50 (44.6)	18 (19.1)
Other	2 (1.1)	-	3 (2.7)	1 (1.1)
Accommodation				
Barracks	87 (45.5)	21 (33.9)	36 (32.1)	-
Service Housing	73 (38.2)	28 (45.2)	41 (36.6)	-
Private Rental	21 (11.0)	5 (8.1)	21 (18.8)	16 (17.0)
Own home	9 (4.7)	8 (12.9)	12 (10.7)	69 (73.4)
Other	1 (0.5)	-	2 (1.8)	9 (9.6)

Table 3-2 continued

	Number (percentage) of respondents			
	EG	CG1	CG2	CG3
Ethnicity				
Maori	44 (22.3)	15 (24.2)	26 (23.2)	1 (1.1)
European/Pakeha	125 (66.1)	42 (67.7)	76 (67.9)	85 (91.4)
Pacific Islander	11 (5.8)	2 (3.2)	4 (3.6)	-
Other	9 (4.8)	3 (4.8)	6 (5.4)	7 (7.5)
Educational Qualifications				
No school qualification	19 (10.0)	6 (9.7)	12 (10.8)	9 (9.6)
School Certificate passes	59 (31.1)	16 (25.8)	28 (25.2)	8 (8.5)
Sixth Form Certificate	39 (20.5)	14 (22.6)	27 (24.3)	5 (5.3)
University Entrance	13 (6.8)	5 (8.1)	9 (8.1)	6 (6.4)
Bursary or Scholarship	6 (3.2)	2 (3.2)	2 (1.8)	2 (2.1)
Trade or Professional	40 (21.1)	12 (19.4)	25 (22.5)	36 (38.3)
Part-Degree or Diploma	7 (3.7)	5 (8.1)	5 (4.5)	13 (13.8)
Bachelor Degree	3 (1.6)	2 (3.2)	3 (2.7)	11 (11.7)
Postgraduate	4 (2.1)	-	-	4 (4.3)
Annual Income				
Below \$20,000	1 (0.6)	1 (1.7)	2 (2.0)	4 (4.8)
\$20,000 to \$24,999	65 (39.6)	10 (16.9)	33 (32.7)	6 (7.2)
\$25,000 to \$29,999	55 (33.5)	16 (27.1)	30 (29.7)	8 (9.6)
\$30,000 to \$34,999	16 (9.8)	13 (22.0)	16 (15.8)	6 (7.2)
\$35,000 to \$39,999	20 (12.2)	8 (13.6)	17 (16.8)	8 (9.6)
\$40,000 to \$44,999	4 (2.4)	7 (11.9)	-	10 (12.0)
\$45,000 to \$49,999	1 (0.6)	2 (3.4)	1 (1.0)	9 (10.8)
\$50,000 to \$54,999	1 (0.6)	1 (1.7)	-	7 (8.4)
\$55,000 to \$59,999	-	1 (1.7)	1 (1.0)	5 (6.0)
\$60,000 to \$64,999	-	-	-	5 (6.0)
\$65,000 to \$69,999	1 (0.6)	-	1 (1.0)	2 (2.4)
Over \$70,000	-	-	-	13 (15.7)
<i>Mean</i>	\$28,115	\$31,829	\$28,836	\$47,537

(e.g. in barracks or flats), and the two largest groups lived in either barracks (45.5%) or Service Housing (38.2%). The majority (66.1%) of EG respondents were of European descent, while 22.3% indicated that they were of Maori descent. Almost two-thirds (61.6%) of the EG had attained a secondary school qualification. Annual income ranged from \$19,000 to \$66,000; with only 1.2% earning \$50,000 or more.

Control Groups (CG1, CG2, CG3). Age ranges and means were higher for the Control Groups than for the EG; the highest being CG3 with an age range of 18 years, eight months to 62 years, three months. Age ranges for CG1 and CG2 were, respectively, 19 years, two months to 44 years, ten months; and 18 years, eight months to 45 years, ten months. The CGs also had higher percentages of females and

people in relationships than the EG. Not surprisingly, this difference in marital status is also reflected in Family Composition and Accommodation statistics, with fewer CG respondents in barracks or flats. Of note is the much higher percentage of CG3 respondents living in their own homes. Percentage of Maori respondents is almost the same (ranging from 22.3% to 24.2%) for the three military groups (EG, CG1, CG2), but considerably lower for the civilian group (1.1%). Over one-quarter (29.8%) of CG3 respondents have university qualifications, a much higher percentage than the military groups. Mean income ranges from \$28,836 for CG2 to \$47,537 for CG3, with over one-third of CG3 respondents (38.5%) earning \$50,000 or more compared with 1.7% and 2.0% for CG1 and CG2 respectively. This is perhaps not surprising considering the large percentage of CG3 respondents in the “Legislators, Administrators & Managers” occupational group (see Table 3-3).

Comparisons between Groups. One-way Analyses of Variance (ANOVAs) show significant differences between the four groups on age [$F(3,443) = 51.18, p < .01$] and income [$F(3,406) = 47.94, p < .01$]. Post hoc T-tests and Chi-squared tests of independence were undertaken when appropriate to identify where significant differences lay. When a number of post hoc comparisons were conducted Bonferroni adjustments were also undertaken to reduce the possibility of Type 1 errors (that is, to reduce the likelihood of finding a number of false positive differences). This convention has been adopted, as appropriate, for all subsequent analyses in this dissertation. These tests show that the EG differs significantly from CG1 and CG3 on age and from CG3 on income. There were no differences between the EG and CG2; the only control group that was able to be matched with the EG. Chi-squared tests of independence suggest that education, ethnicity, living arrangements, marital status and gender differ between groups. Comparisons between the EG and CG1 and CG3 will need to be handled with care because of these fundamental differences.

Table 3-3: Summary of “civilian” socio-demographic information for Control Group 3 (CG3) at Stage 1 of the study (“pre-deployment”).

	Number (percentage) of respondents
Occupation Group	
Legislators, Administrators & Managers	32 (34.8)
Professionals	14 (15.2)
Technicians & Associate Professionals	9 (9.8)
Clerks	14 (15.2)
Service & Sales Workers	3 (3.3)
Trades Workers	8 (8.7)
Plant & Machine Operators & Assemblers	6 (6.5)
Elementary Occupations	3 (3.3)
Other	3 (3.3)
Association with Military	
Military Service	11 (11.7)
RF	4 (36.4)
TF	7 (63.6)
Partner Military Service	3 (12.9)
Parent Military Service	6 (25.0)
Other Relative NZDF Service	5 (21.6)
NZDF Civilian	5 (21.6)
Ex-NZDF Civilian	1 (4.3)

3.1.2. Military Information

Table 3-4 presents a summary of military background information for the three military groups (EG, CG1, CG2), while Appendix C presents subjects’ units. Rank includes “Acting Rank” specifically for the deployment for the EG and CG1. Table 3-5 contains information regarding previous overseas deployment experience. However, this must be viewed with caution as many subjects did not respond to the questions regarding previous deployments.

Experimental Group. Most of the EG were Privates and Junior Non-Commissioned Officers (Lance Corporals or Corporals), with 79.6% being Corporals or below. Length of service ranged from almost five months to 19 years, seven months. Average length of service was 6 years, nine months. The “Combat” corps were most highly represented, with most (64.4%) respondents being from the Royal New Zealand Artillery (RNZA), Royal New Zealand Infantry Regiment (RNZIR) or Royal New Zealand Armoured Corps (RNZAC). Likewise the “Combat” trades were the most highly represented, with over six times as many respondents in the “Combat”

Table 3-4: Summary of military background information at Stage 1 of the study (“pre-deployment”) for the Experimental Group (EG) and Control Groups 1 and 2 (CG1 and CG2).

	Number (percentage) of respondents		
	EG	CG1	CG2
Rank			
Private	85 (44.5)	9 (14.5)	37 (33.0)
Lance Corporal	39 (20.4)	9 (14.5)	20 (17.9)
Corporal	28 (14.7)	17 (27.4)	24 (21.4)
Sergeant	14 (7.3)	5 (8.1)	13 (11.6)
Staff Sergeant	6 (3.1)	6 (9.7)	7 (6.3)
Warrant Officer Class Two	3 (1.6)	2 (3.2)	2 (1.8)
Warrant Officer Class One	1 (0.5)	4 (6.5)	-
Second Lieutenant	-	1 (1.6)	-
Lieutenant	5 (2.6)	3 (4.8)	2 (1.8)
Captain	7 (3.7)	3 (4.8)	4 (3.6)
Major & above	3 (1.5)	3 (4.8)	2 (1.8)
Civilian	1 (0.5)	-	1 (0.5)
Length of Service			
Less than 3 years	36 (19.7)	6 (9.8)	19 (17.6)
3 to 4 years	34 (18.6)	11 (18.0)	15 (13.9)
5 to 6 years	25 (13.7)	9 (14.8)	14 (13.0)
7 to 8 years	43 (23.5)	9 (14.8)	19 (17.6)
9 to 10 years	17 (9.3)	4 (6.6)	18 (16.7)
11 to 12 years	13 (7.1)	3 (4.9)	10 (9.3)
13 to 14 years	4 (2.2)	3 (4.9)	3 (2.8)
15 to 16 years	6 (3.3)	4 (6.6)	4 (3.7)
17 to 18 years	4 (2.2)	4 (6.6)	3 (2.8)
19 years and over	1 (0.5)	8 (13.1)	3 (2.8)
Corps			
RNZA	13 (6.8)	15 (24.2)	16 (14.3)
RNZAC	24 (12.6)	2 (3.2)	4 (3.6)
RNZE	14 (7.3)	1 (1.6)	6 (5.4)
RNZ Sigs	4 (2.1)	4 (6.5)	10 (8.9)
RNZIR	86 (45.0)	17 (27.4)	31 (27.7)
NZSAS	2 (1.0)	-	-
NZIC	2 (1.0)	-	2 (1.8)
RNZCT	13 (6.8)	3 (4.8)	12 (10.7)
RNZAMC	6 (3.1)	1 (1.6)	1 (0.9)
RNZAOC	3 (1.6)	3 (4.8)	7 (6.3)
RNZEME	23 (12.0)	5 (8.1)	18 (16.1)
RNZCHD	-	-	1 (0.9)
RNZMP	-	-	2 (1.8)
RNZNC	-	-	1 (0.9)
RNZN	-	11 (17.6)	-
Trade Group			
Administrative & Specialist	4 (2.1)	1 (2.0)	8 (7.1)
Clerical	9 (4.7)	1 (2.0)	20 (17.9)
Combat	100 (52.6)	9 (17.6)	18 (16.1)
Communications	9 (4.7)	6 (11.8)	15 (13.4)
Construction/Driver	8 (4.2)	-	4 (3.6)
Food/Health	9 (4.7)	2 (3.9)	5 (4.5)
Mechanical	16 (8.4)	5 (9.8)	8 (7.1)
Skilled Technical/Electronics	7 (3.7)	2 (3.9)	8 (7.1)
Instructor	13 (6.8)	16 (31.4)	18 (16.1)

trade-group than any other trade-group. Only 11.3% of respondents had been on a previous operational deployment. However, considerably more (85.9%) had experience of deploying overseas for non-operational reasons.

Control Groups. The greatest proportion of CG1 and CG2 respondents were Corporals and below (56.4% and 72.3% respectively), although the distribution of rank for CG2 is more similar to the EG. Average length of service was 9 years, ten months for CG1 and 7 years, ten months for CG2. Although the “Combat” corps were more highly represented than any other group in both CG1 and CG2, the percentage of respondents in “Combat” corps was lower (54.8% and 45.6% respectively) than for the EG. Likewise, the “Combat” trades were not as well represented in CG1 and CG2 as they were in the EG. Slightly greater percentages of CG1 and CG2 respondents had previous operational deployment experience (29.0% and 17.6%), but numbers of previous non-operational overseas deployments were roughly equivalent to the EG.

Comparisons between Groups. A one-way ANOVA shows a significant difference in length of service [$F(2,351) = 9.42, p < .01$]. Post-hoc t-tests show that mean length of service for EG differs significantly from that for CG1 but not from CG2. Again, this means that the properly matched sample, CG2, does not differ from the EG. With respect to the amount of time spent on previous overseas deployments, there was no difference between the groups for operational deployments but a significant difference for non-operational deployments [$F(2,270) = 5.16, p < .01$]. T-tests show that once again, EG differs significantly from CG1 but not from CG2. Chi-squared tests were conducted on rank and trade-group and results show that the distributions of these variables differ between the groups. These differences will need to be kept in mind in further comparisons between the groups.

Control Group 3 (CG3) Military Experience. As Table 3-3 shows, 11.7% of CG3 respondents had military experience, either RF or TF. Furthermore, a number of respondents’ family members had military experience.

Table 3-5: Summary of previous overseas deployment information at Stage 1 of the study (“pre-deployment”) for the Experimental Group (EG) and Control Groups 1 and 2 (CG1 and CG2).

	Number (percentage) of respondents		
	EG	CG1	CG2
Number of Operational Deployments			
0	86 (88.7)	40 (70.2)	75 (82.4)
1	8 (8.2)	11 (19.3)	14 (15.4)
2 or more	3 (3.1)	6 (9.7)	2 (2.2)
Total amount of time away (Op)			
6 months & under	5 (50.0)	10 (52.6)	8 (50.0)
7 to 12 months	3 (30.0)	4 (21.1)	8 (50.0)
Over 13 months	2 (20.0)	3 (26.3)	-
Number of Non-Op Deployments			
0	23 (14.1)	11 (18.3)	21 (19.3)
1	29 (17.8)	9 (15.0)	27 (24.8)
2 to 5	66 (40.5)	22 (36.7)	34 (31.2)
6 to 9	33 (20.2)	5 (8.3)	13 (11.9)
10 & over	12 (7.4)	13 (21.7)	14 (12.8)
Total amount of time away (Non-Op)			
6 months & under	90 (67.2)	29 (60.4)	51 (57.3)
7 to 12 months	27 (20.1)	4 (8.3)	13 (14.6)
13 to 24 months	7 (5.2)	6 (12.5)	8 (9.0)
25 to 36 months	5 (3.7)	4 (8.3)	11 (12.4)
37 months & over	5 (3.7)	5 (10.4)	6 (6.7)

3.2 Sample Bias

As Table 3-1 shows, there was a significant drop in the numbers of respondents at each stage of the study for each of the four groups. Interestingly, it seems that the Experimental Group (EG) was the most badly effected even though they were the focus of interest for the study. Control Group respondents were more likely than EG subjects to persevere with the study, with Control Group 3 (CG3) respondents being most likely to complete all questionnaires.

Appendix D describes analyses, similar to those used in MacDonald et al (1996), that were conducted to check that those respondents who “dropped out” at some stage of the study did not differ from those who continued with the study. Not only would this negate the possibility of sample bias (it may have been, for example, that those personnel who did not complete a questionnaire were those who had higher levels of psychological distress) but it would also provide justification for using data from all subjects for some of the analyses, not just for those who completed all questionnaires.

The analyses revealed no significant differences between those dropping out and those completing questionnaires at any stage within either the EG or the three control groups, on any of the major mental health outcome measures i.e. on all “total” scores from each of the scales. It was therefore valid to include all respondents in all further analyses. However, as can be seen from some of the following results, when examining changes throughout the stages of the study, only those subjects who completed questionnaires at all stages were included, in order to use more robust analyses.

3.3 Mental Health Across Deployment Stages

Respondents from all four groups completed a number of “mental health scales” at the different stages of the study. These scales are described in Chapter 2. This section will present longitudinal information on the levels of mental health outcome measures measured by these scales throughout the stages of the study, first for the experimental group and then for the control groups. This will provide a picture of any changes across the deployment.

To give the most “true” picture of the changes across the deployment, only the data for those personnel who completed **all** relevant questionnaires will be presented.

3.3.1 Experimental Group (EG)

Bar-charts and results of analyses will be presented for all four stages of the study (Stage 1 - pre-deployment; Stage 2 - mid-deployment; Stage 3 - post-deployment and Stage 4 - follow-up) for the Experimental Group (EG), unless stated otherwise.

Stress. Figure 3-1 presents the findings for one of the stress measures included in the study, the “Hassles Scale”.

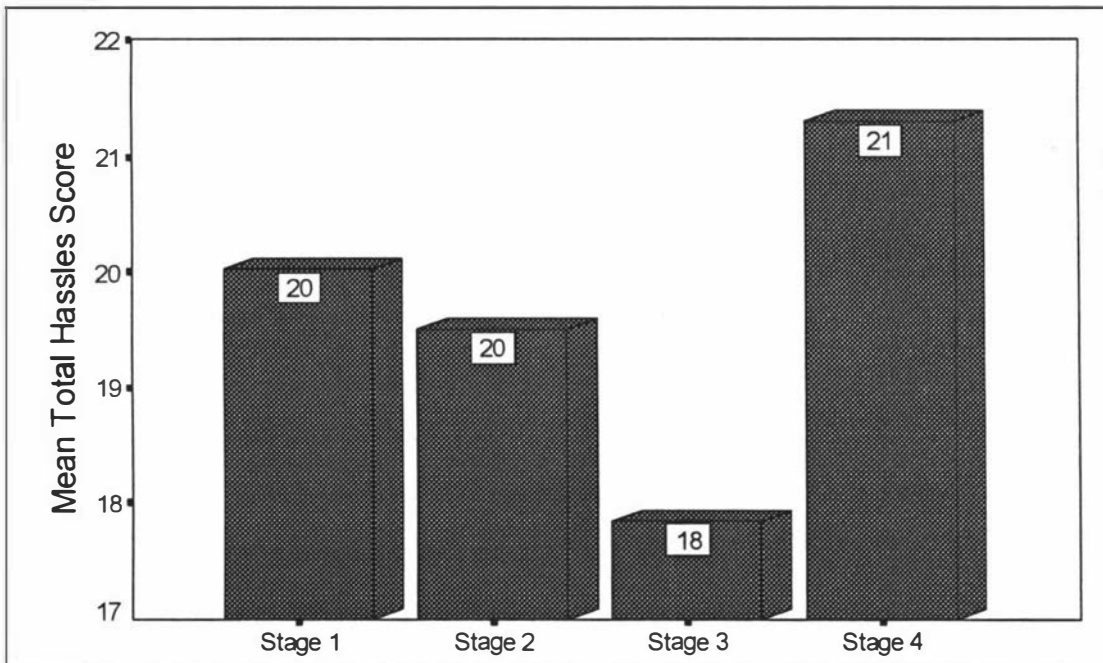


Figure 3-1: Mean level of daily hassles at each stage of the study for Experimental Group (EG) respondents (n = 40).

As Figure 3-1 shows, mean level of daily hassles for EG respondents was higher at pre-deployment (Stage 1) then decreased during the deployment (Stage 2) to reach the lowest level during the study, at the post-deployment stage (Stage 3). The level of stress then rose markedly to reach the highest point, at follow-up (Stage 4). A repeated measures ANOVA shows that the change in level of stress throughout the stages of the study is not significant. This suggests that the overall level of stress was fairly constant throughout the deployment.

Deployment Stress. Figure 3-2, which presents the findings from the “Deployment Hassles Scale”, the scale designed to measure the level of chronic or “everyday” stress associated with particular aspects of the deployment, shows that mean level of deployment hassles was greater at pre-deployment than during the deployment or at the end of the deployment. However, a repeated measures ANOVA showed that the difference in mean level of deployment hassles throughout the deployment was not significant. These findings suggest that the overall level of stress specifically associated with deployment concerns was constant throughout the deployment.

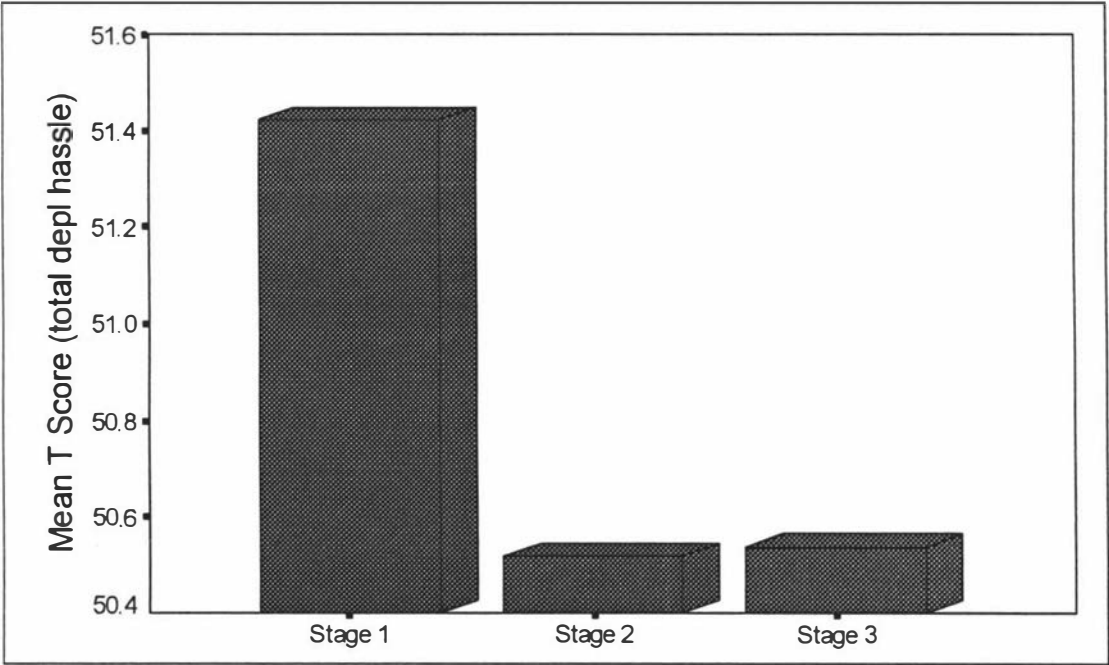


Figure 3-2: Mean level (T Score) of deployment hassles at each stage of the study for Experimental Group (EG) respondents (n = 72). NB. Scores were transformed to T scores as there were a different number of items at each stage.

Psychological Well-Being. Figure 3-3 shows that the stage with the highest mean level of psychological well-being (from the Mental Health Inventory) was the follow-up stage whilst the lowest level was at mid-deployment. More specifically, mean level of psychological well-being decreased slightly from pre-deployment to mid-deployment, then increased to post-deployment and follow-up. However, a repeated measures ANOVA shows that the changes in psychological well-being across all stages are not significant.

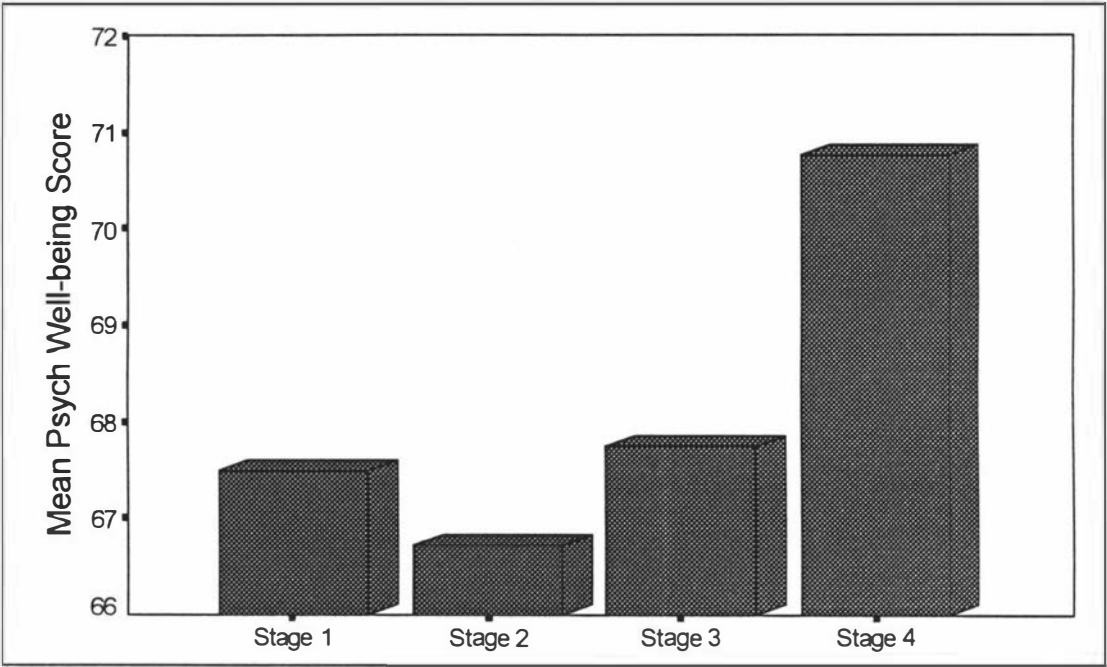


Figure 3-3: Mean level of Psychological Well-Being at each stage of the study for Experimental Group (EG) respondents (n = 35).

Psychological Distress. Not surprisingly, as high levels of psychological well-being are usually associated with low levels of psychological distress and vice-versa, mean level of psychological distress is highest at mid-deployment. More specifically, mean level of psychological distress (from the Mental Health Inventory) is relatively high at pre-deployment, increasing slightly to mid-deployment then decreasing markedly at post-deployment before rising slightly at follow-up. However, a repeated measures ANOVA showed that these changes were not significant.

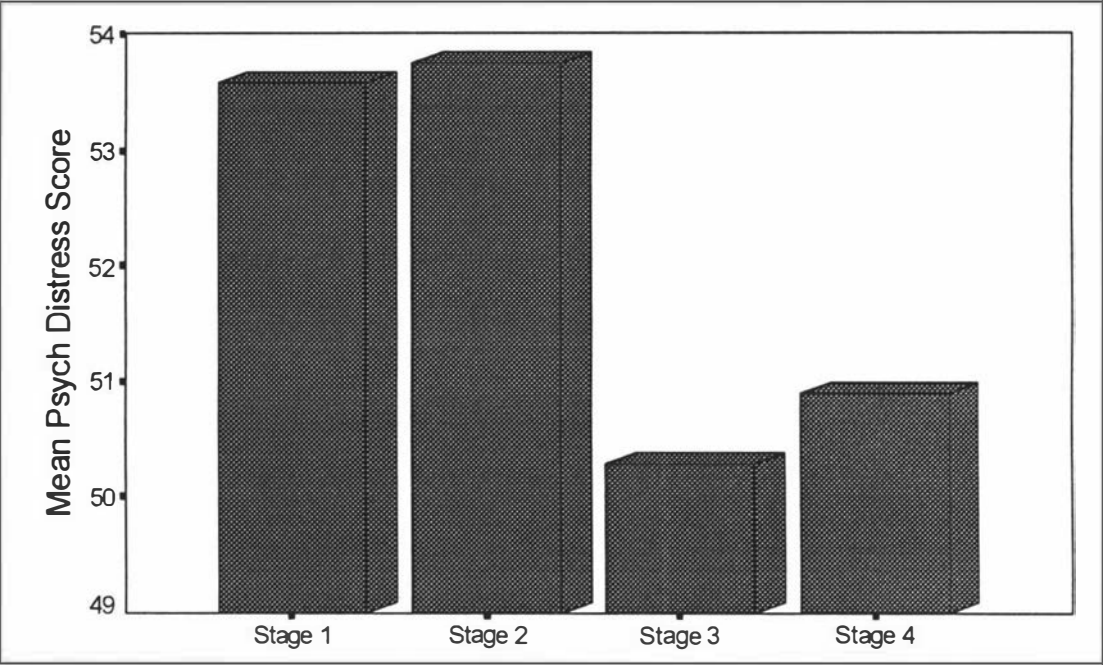


Figure 3-4: Mean level of Psychological Distress at each stage of the study for Experimental Group (EG) respondents (n = 31).

Total Distress. Figure 3-5 presents mean levels of Total Distress (total score on the Hopkins Symptom Checklist), across the four stages of the study. This reflects a similar pattern to Figure 3-4, except that there is a greater increase to follow-up level. Furthermore, this is the highest level. However, a repeated measures ANOVA performed on this data shows that change in mean total distress score across the stages of the study is not significant.

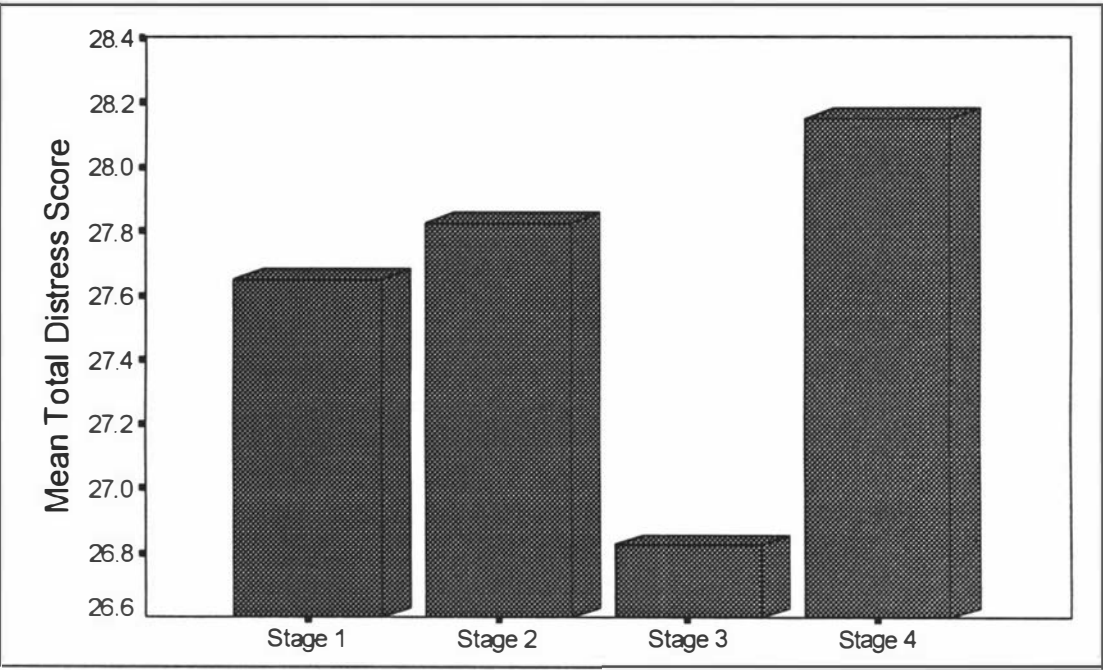


Figure 3-5: Mean level of Total Distress at each stage of the study for Experimental Group (EG) respondents (n = 40).

Post Traumatic Stress Disorder (PTSD). Figure 3-6 shows that mean level of PTSD symptoms increased from pre-deployment to post-deployment and again to follow-up. A repeated measures ANOVA shows that mean level of PTSD symptoms differs significantly across the deployment stages [$F(2,96) = 3.62, p<.05$]. Paired sample t-tests suggest that the differences between Stage 1 and Stage 3 [$t(90) = -2.08, p<.05$], and Stage 1 and Stage 4 [$t(66) = -3.77, p<.001$] are significant. This suggests that there was a significant increase in levels of PTSD symptoms from the pre-deployment to post-deployment stage, and the pre-deployment to follow-up stage. The increase from post-deployment to follow-up was not significant.

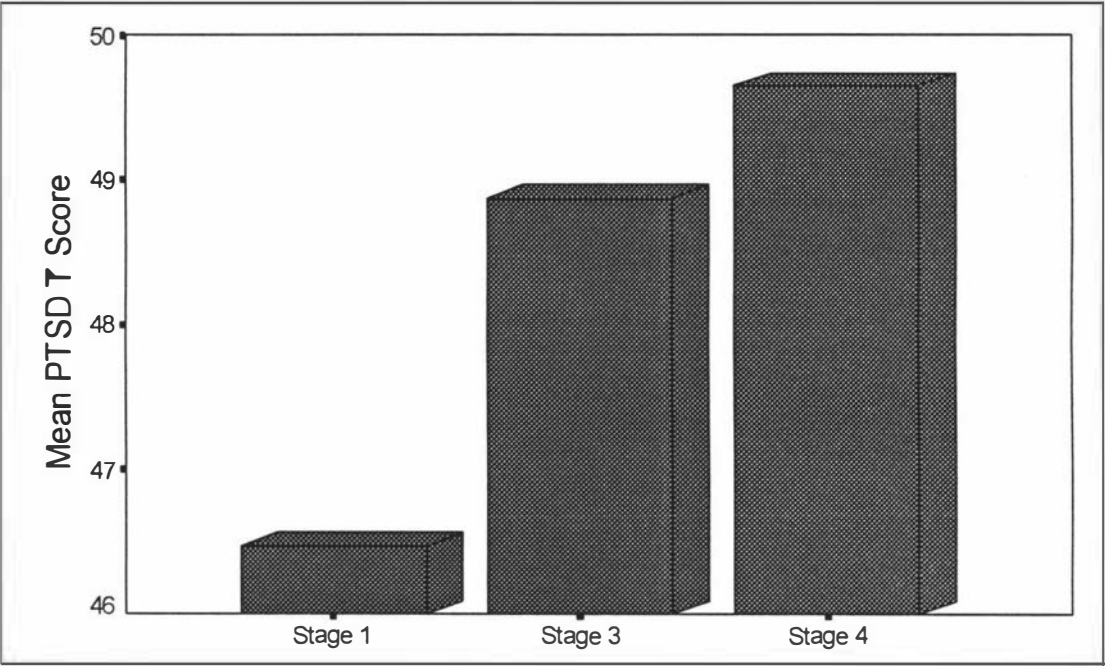


Figure 3-6: Mean Total PTSD T Score at each stage of the study for Experimental Group (EG) respondents (n = 49). NB. Scores were transformed to T scores as there were a different number of items in the M-PTSD mil and M-PTSD civ scales.

State Anxiety. Figure 3-7 shows an increase in mean level of state anxiety from pre-deployment to mid-deployment, then a decrease at post-deployment. It then increases at follow-up to roughly the same level as at mid-deployment. However, a repeated measures ANOVA shows that this change in mean level of state anxiety over the deployment stages is not significant.

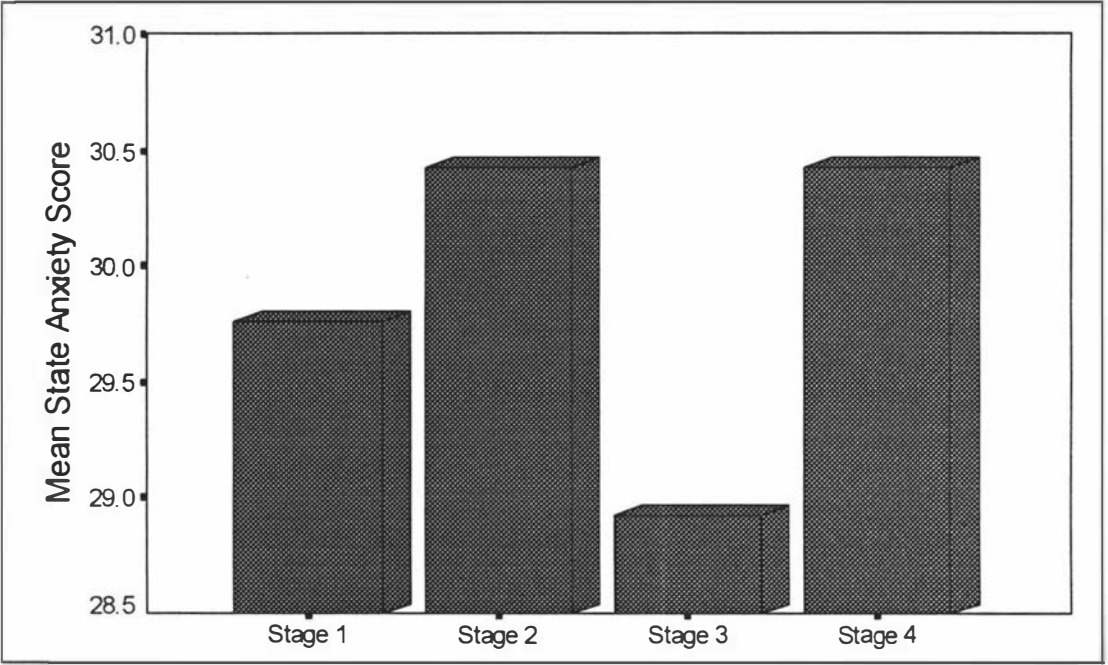


Figure 3-7: Mean level of State Anxiety at each stage of the study for Experimental Group (EG) respondents (n = 38).

Depression. Figure 3-8 presents mean level of depression for the two stages of the study where the Beck Depression Inventory was used. That is, the two post-deployment stages, “post-deployment” and “follow-up”. It seems that mean level of depression was higher at follow-up than at post-deployment. A paired-sample t-test shows that this difference is significant [$t(47) = -2.23, p < .05$].

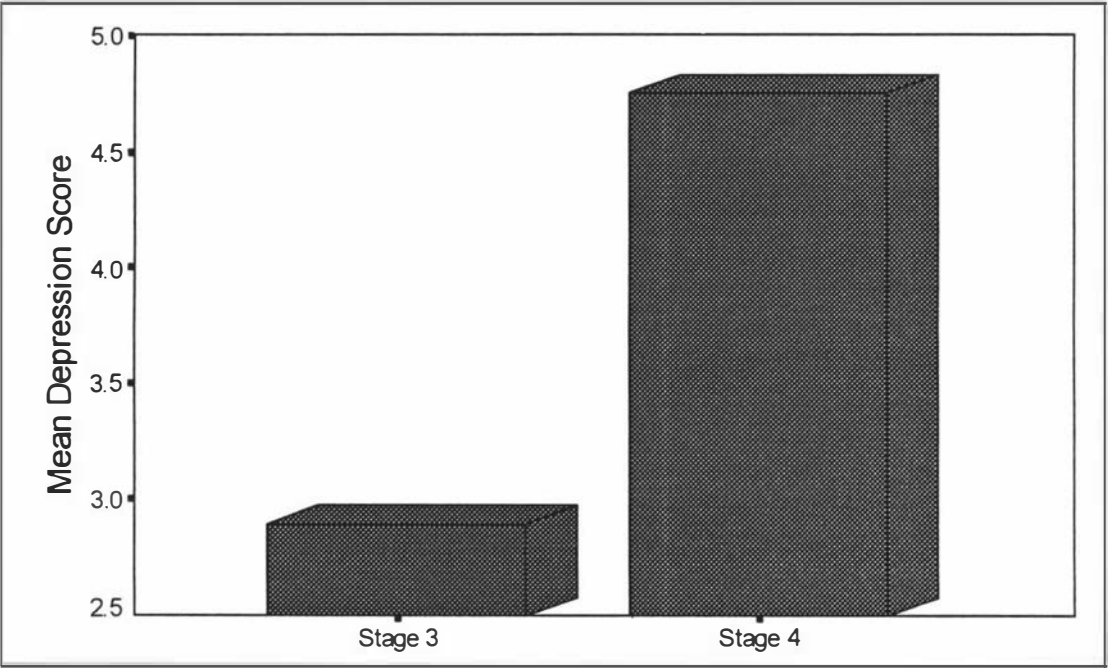


Figure 3-8: Mean level of Depression at Stages 3 and 4 of the study (“post-deployment” and “follow-up”) for Experimental Group (EG) respondents (n = 48).

3.3.2 Comparisons with Control Groups

Bar-charts and results of ANOVA analyses will now be presented for all of the groups involved in the study, to enable comparisons to be made between mental health outcome measures, changes in these outcome measures across the three common stages of the study (Stage 1 - pre-deployment; Stage 3 - post-deployment and Stage 4 - follow-up), and respondent group.

Stress. Figure 3-9, below, presents the results from the Hassles Scale.

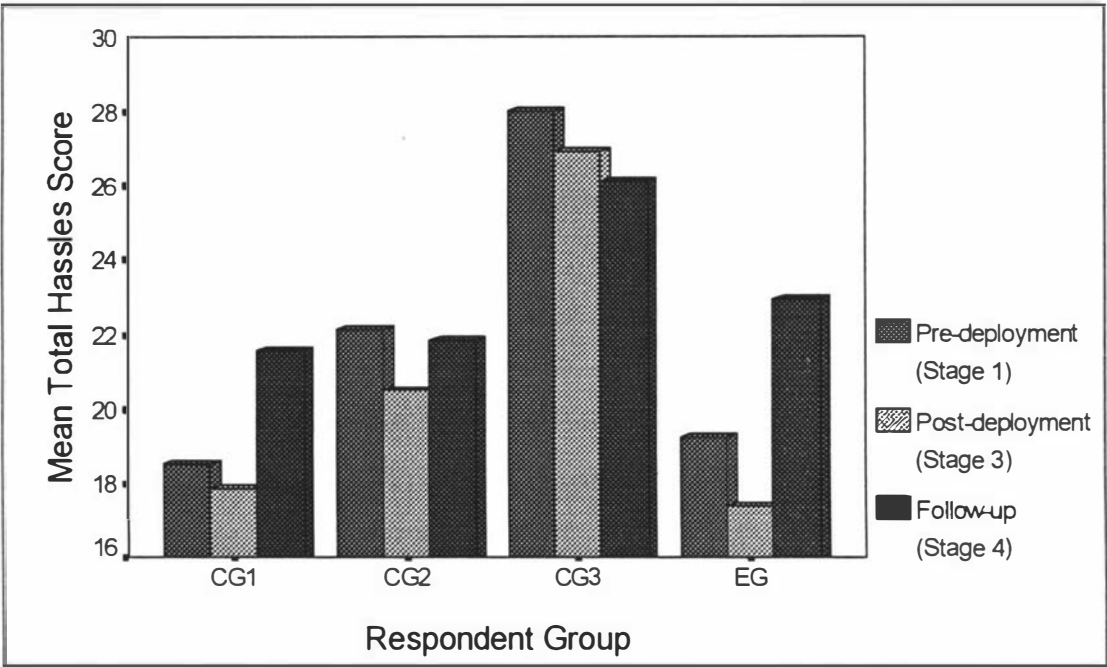


Figure 3-9: Mean level of daily hassles at each common stage of the study for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3).

It is interesting to note from Figure 3-9 that, of all of the control groups, the pattern of stress for CG1 is most like that for the EG, with mean level of daily hassles decreasing from pre-deployment levels to post-deployment levels, then increasing markedly to follow-up levels. This suggests a common pattern for those personnel who deploy overseas. That is, the deployment itself seems to result in lower overall levels of stress than those periods back in NZ. This is further corroborated by the CG2 pattern - with the exception of the follow-up level for the EG, CG2 stress levels

are the highest of any of the military groups, and these personnel did not deploy overseas.

It is also interesting to note that the group with the highest overall levels of daily hassles (or stress) at any of the stages of the study was CG3, the civilian control group. This suggests that levels of stress are lower for personnel in the military than their civilian counterparts, even before, during and after deployments. However, it must be kept in mind that the members of this control group were older than the members of the other groups, had a number of managers and a higher mean level of income.

An ANOVA with deployment stage as a within subjects factor and group as a between subjects factor was conducted to see if there were any differences between mean levels of stress throughout each stage of the study, between groups and to examine the joint relationship between stage of study and group on mean level of daily hassles. The interaction between deployment stage and group was not significant (which suggests that there was no particular combination of stage and group that differed, in mean level of daily hassles, from any other combination). However, there was a significant difference between mean level of daily hassles for the groups [$F(3,205) = 3.74, p < .05$] in addition to a significant difference between mean level of daily hassles throughout deployment stages [$F(2,410) = 3.33, p < .05$]. This suggests that there is no particular combination of deployment stage and group which leads to mean levels of stress which are different from any other, but that there is a difference in mean level of stress between the groups and throughout the stages of the study for the sample as a whole.

Differences between Groups. As the ANOVA described above showed that there is a difference in mean level of daily hassles between the different groups, further analyses were conducted to determine exactly where these differences were. Independent sample t-tests showed that there were no differences between mean levels of daily hassles for the EG and CG1 or the EG and CG2 at any stage of the study. The only difference between mean level of daily hassles for CG1 and CG2 at any stage was at the pre-deployment stage [$t(172) = -2.74, p < .01$]. There were differences between mean levels of daily hassles for the EG and CG3 at pre-

deployment and post-deployment [$t(274) = -4.83, p < .001$; $t(172) = -4.07, p < .001$], and also for CG1 and CG3 at pre-deployment and post-deployment [$t(152) = -4.66, p < .001$; $t(115) = 3.51, p < .01$]. Mean levels of daily hassles for CG2 and CG3 differed only at the post-deployment stage [$t(150) = -2.86, p < .01$]. It seems that mean level of stress for the military groups did not differ but that this was, in general, less than that for the civilian group at all but follow-up. A further interesting point is that level of stress at follow-up did not differ for any of the groups.

Differences throughout Stages. As the ANOVA described above highlighted differences in level of daily hassles throughout the study, one-way repeated measures ANOVAs were conducted to determine the differences across stage of the study for each of the control groups. The results of these analyses showed that, as for the EG, levels of stress did not differ throughout the stages of the study for any of the control groups.

Deployment Stress. Figure 3-10, over, presents mean levels of deployment hassles for the two groups that deployed overseas (the EG and CG1) at pre- and post-deployment. While the pattern is similar for both groups (and, incidentally, similar to the pattern for daily hassles presented in Figure 3-9), with mean levels of deployment hassles being greater at pre-deployment than at post-deployment for both groups, CG1 levels are greater than those for the EG.

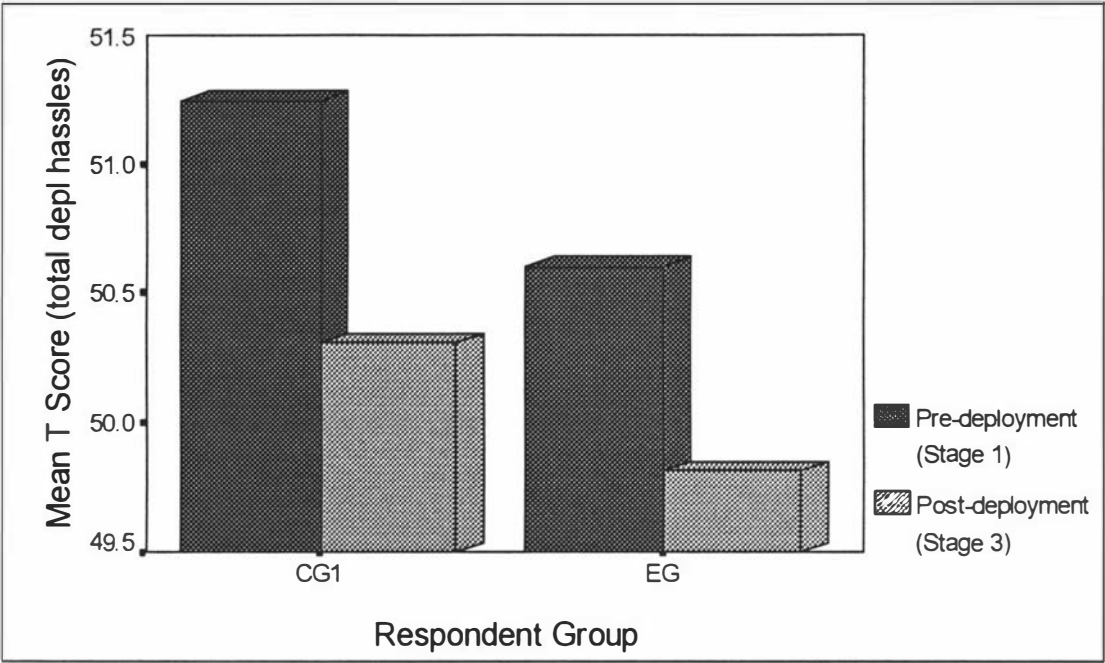


Figure 3-10: Mean level of deployment hassles (T Score) at pre and post-deployment for the Experimental Group (EG) and Control Group 1 (CG1). NB. Scores were transformed to T scores as there were a different number of items at each stage.

An ANOVA with repeated measures on deployment stage and group as a between subjects factor showed no significant results. That is, there is no difference in deployment hassles as a result of combination of deployment stage and group membership and no differences between deployment stages or groups.

Psychological Well-Being. As Figure 3-11, over, shows once again the group with the most similar pattern to the EG is CG1. Whilst levels of psychological well-being are higher at the different stages of the study for CG1 than for the EG, the pattern is the same, in that psychological well-being increases from pre-deployment to post-deployment, than again to follow-up. It is interesting to note that CG2 is the only one of the military groups to have a lower “post-deployment” level of psychological well-being than the pre-deployment level. This suggests that the deployment experience may be contributing towards positive gains in mental health. The civilian control group, CG3, has lower levels of psychological well-being at all stages of the study than any of the military groups.

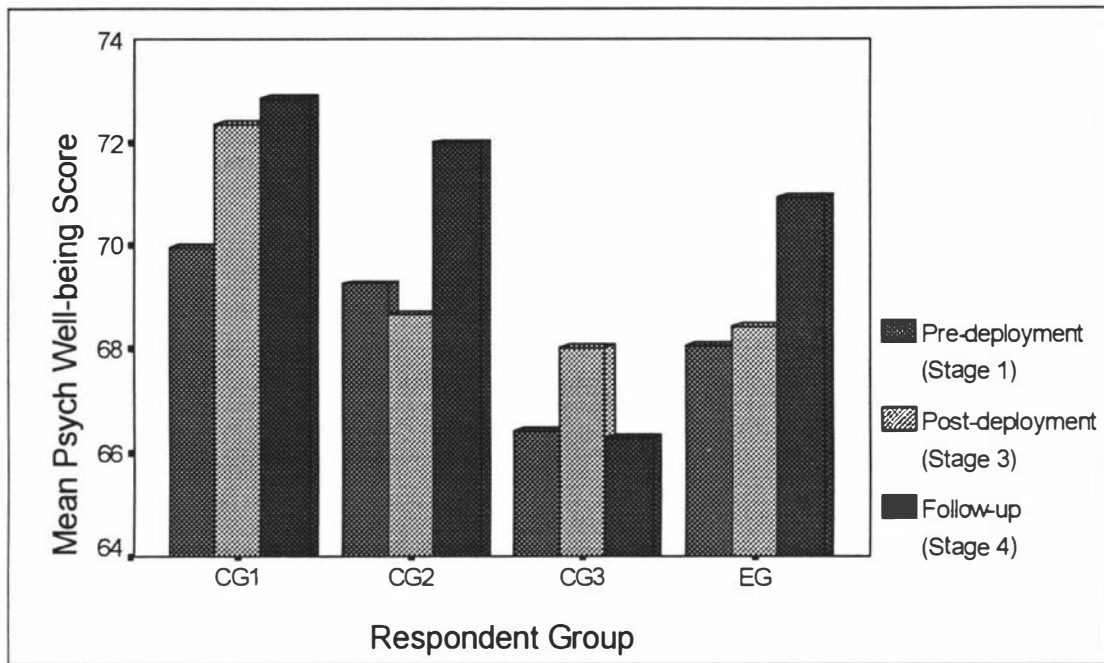


Figure 3-11: Mean levels of Psychological Well-Being at each common stage of the study for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3).

Results of an ANOVA conducted with stage of study as a within subjects factor and group as a between subjects factor showed no significant results. That is, there is no difference in psychological well-being as a result of a combination of deployment stage and group membership and no difference between deployment stages or groups.

Psychological Distress. Figure 3-12 shows that, yet again, the group with the most similar pattern to the EG is CG1. Psychological distress, for both these groups, was highest at the pre-deployment stage, lowest at the post-deployment stage and whilst it increased at the follow-up stage it was not as high as pre-deployment levels. CG2 has the highest levels of psychological distress of any of the military groups and the pattern of psychological distress levels over time for this group is the same as for CG3. This means that a similar pattern was observed for the two groups who deployed overseas (the EG and CG1) and also for the two groups who remained in NZ (CG2 and CG3). The lower post-deployment levels for these groups again suggests that the deployment experience may be contributing towards positive gains in mental health. Mean levels of psychological distress were higher for the civilian group, CG3, than for any of the military groups, at each stage of the study.

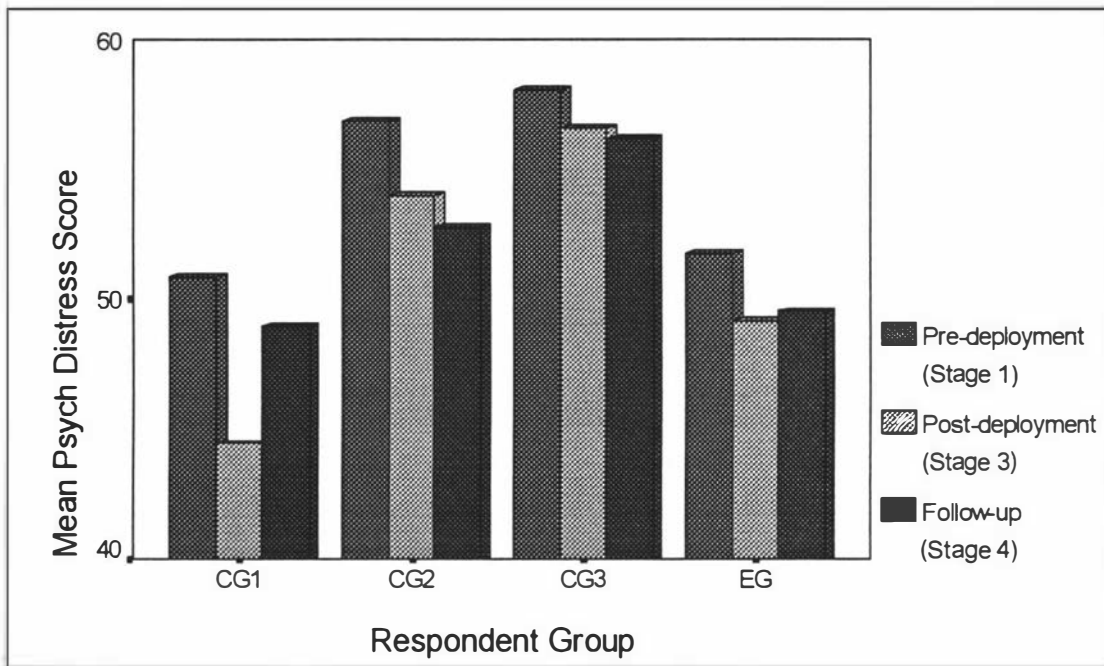


Figure 3-12: Mean levels of Psychological Distress at each common stage of the study for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3).

An ANOVA with deployment stage as a within subjects factor and group as a between subjects factor was conducted to see if there were any relationships between levels of psychological distress at each stage of the study and group membership. The interaction between deployment stage and group was not significant and neither was group membership. That is, there was no particular combination of deployment stage and group which had a different mean level of psychological distress than any other. There was also no difference in mean level of psychological distress for respondents in different groups, but there was a significant difference between mean levels of psychological distress for all respondents overall throughout deployment stages [$F(2,344) = 3.56, p < .05$]. However, when three one-way repeated measures ANOVAs were conducted to analyse mean levels of psychological distress throughout deployment stages for each of the control groups, no differences were found.

Total Distress. Figure 3-13 presents mean total score on the Hopkins Symptom Checklist (i.e. the Total Distress Score) for each group at each common stage of the study. Once again, the pattern for CG1 is the most similar to the EG of all of the groups. However, although total distress decreases at post-deployment from pre-deployment levels, follow-up levels do not increase to above pre-deployment levels for CG1 as they do for the EG. Once again, total scores are higher for CG2 than for the other two military groups, except at follow-up, where mean EG level is the highest of the military groups. Mean total distress scores are higher for CG3 at all stages of the study than for the military groups.

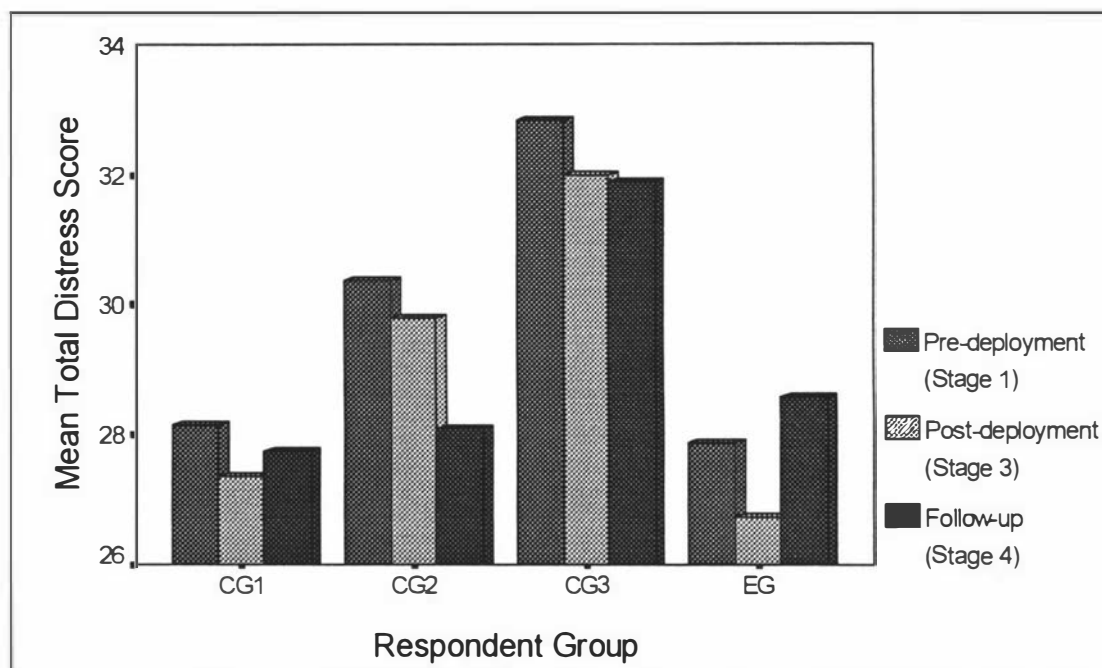


Figure 3-13: Mean Total Distress Score at each common stage of the study for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3).

An ANOVA with stage of study as a within subjects factor and group as a between subjects factor was performed on this data. There was a significant interaction between deployment stage and group [$F(6,404) = 2.18, p < .05$]. That is, particular combinations of deployment stage and group have resulted in different levels of mean total distress. The information presented in Figure 3-13 suggests that this interaction has occurred because whilst mean level of total distress for CG1 and CG2 respondents

is higher than that for the EG at pre-deployment and post-deployment, both of these means are lower than the EG mean at follow-up. There was also a significant difference between mean levels of total distress for the groups [$F(3,202) = 7.01$, $p < .001$].

Differences between Groups. As the ANOVA described above showed that there is a difference in mean level of total distress between the different groups, further analyses were conducted to determine exactly where these differences were. Independent sample t-tests showed that there were no differences between mean levels of total distress for the EG and CG1. Mean levels of total distress differed for EG and CG2 at pre-deployment and post-deployment [$t(299) = -3.02$, $p < .01$; $t(168) = -2.15$, $p < .05$], while the EG differed from CG3 at all stages [$t(283) = 4.56$, $p < .001$; $t(174) = -4.60$, $p < .001$; $t(140) = -2.90$, $p < .01$]. CG1 and CG2 differed at pre-deployment only [$t(170) = -3.75$, $p < .001$], CG1 and CG3 at all stages [$t(154) = -5.32$, $p < .001$; $t(109) = -3.03$, $p < .01$; $t(107) = -3.40$, $p < .001$] and CG2 and CG3 at post-deployment and follow-up [$t(150) = -2.14$, $p < .05$; $t(142) = -2.85$, $p < .01$]. For the most part, it seems that mean level of total distress at the different deployment stages did not differ for the soldiers who deployed. It also seems that the military groups had significantly lower levels of total distress throughout the study than the civilian group.

Post-Traumatic Stress Disorder (PTSD). Figure 3-14, over, presents some interesting results. The EG is the only group to have such a marked increase in total PTSD score across the stages of the study. CG3 has a similar pattern, and higher mean levels at any stage than the EG, but the increase across stages is not as marked. Furthermore, pre-deployment levels are higher for all groups than the EG, as are CG2 and CG3 levels at post-deployment, whilst all follow-up levels are higher than EG levels. Interestingly, the highest level is for CG1 at pre-deployment.

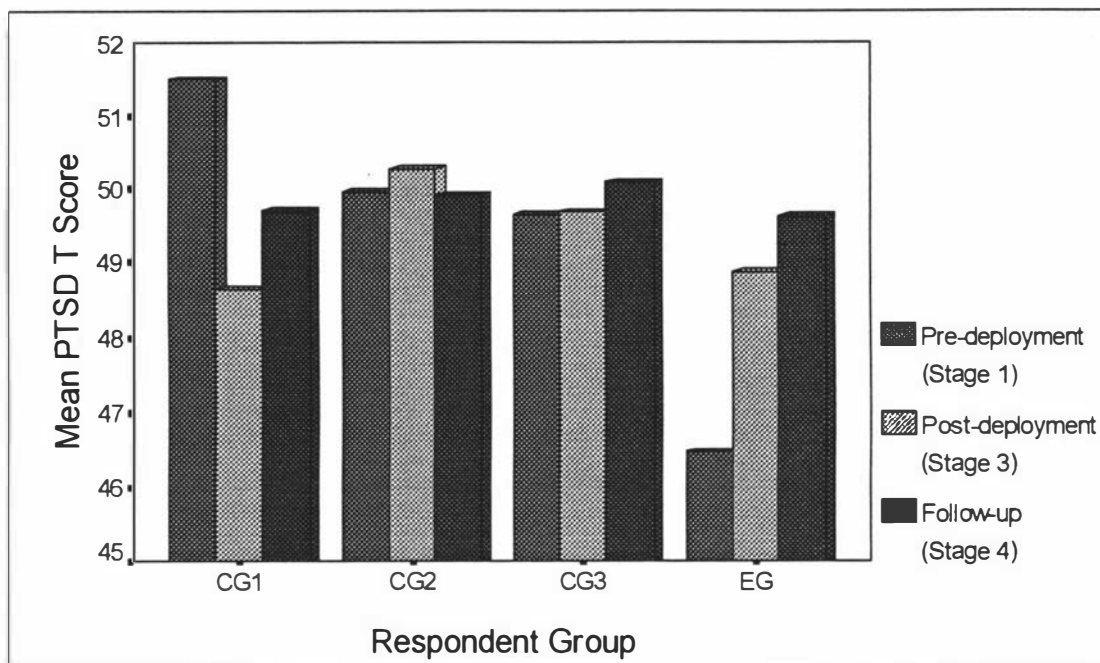


Figure 3-14: Mean Total PTSD T Score at each common stage of the study for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3).

A repeated measures ANOVA with stage of study as a within subjects factor and group as a between subjects factor was conducted. No effects were significant. As a further comparison to the EG situation (in which PTSD T Score was found to differ significantly across the stages of the study - see Section 3.3.1), three one-way repeated measures ANOVAs were conducted for each of the control groups. None of these were significant, which suggests that there was no change in levels of PTSD symptoms across the stages in the study for any of the control groups.

State Anxiety. Figure 3-15, over, presents the pattern of mean state anxiety level across the stages of the study. The patterns for CG1 and CG2 are most similar to the pattern for the EG, in that post-deployment levels are lower than pre-deployment ones and there is an increase to follow-up levels. However, this increase is more marked for the EG, with follow-up levels being higher than pre-deployment ones. In fact, mean level of state anxiety at follow-up for the EG is higher than for any of the military groups at any stage of the study. This again indicates that the period of time approximately six months after returning to NZ after a peacekeeping deployment is

one of the most stressful and anxiety-producing times for military personnel. Once again, mean levels for the civilian control group, CG3, are higher than those for the military groups, at each stage of the study.

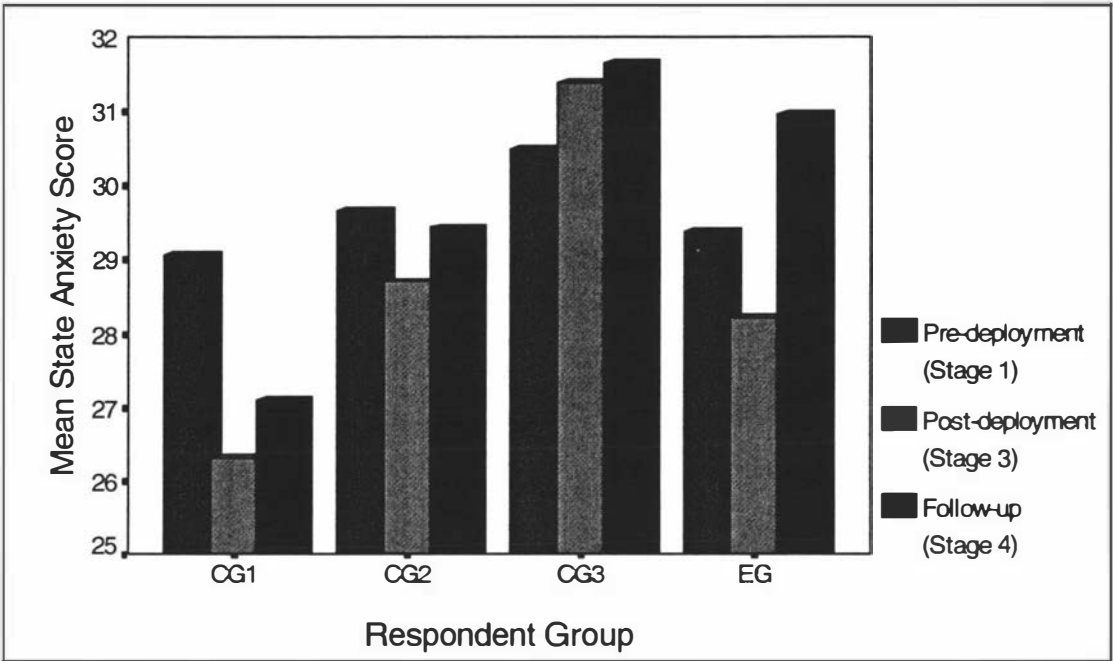


Figure 3-15: Mean level of State Anxiety at each common stage of the study for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3).

An ANOVA with stage of study as a within subjects factor and group as a between subjects factor was conducted on this data. It highlighted no significant effects. That is, there was no interaction of stage of study and group, or difference between groups or stage of study for state anxiety.

Depression. As Figure 3-16 shows, mean levels of depression increased from post-deployment to follow-up for both of the groups that deployed overseas, the EG and CG1. They decreased slightly over the two time-frames for CG2 and CG3. Figure 3-16 also shows that mean level of depression at both stages was higher for the civilian group, CG3, than for any of the military groups.

A repeated measures ANOVA showed that there is a significant interaction between group and stage of study [$F(3, 203) = 2.81, p < .05$]. That is, a particular combination of group and deployment stage was associated with a significantly different mean

level of depression. The information in Figure 3-16 suggests that this is because mean level of depression for the EG is lower than that for CG2 at the post-deployment stage but higher than that for CG2 at follow-up. It seems that membership of the EG does make a difference, when compared with CG2, in terms of change in mean level of depression from post-deployment to follow-up. There is also a significant difference between mean levels of depression for the groups [$F(3,203) = 3.563$, $p < .05$].

Differences between Groups. As the ANOVA described above showed that there is a difference in mean level of depression between the different groups, further analyses were conducted to determine exactly where these differences were. Independent sample t-tests showed that there were no differences between mean levels of depression for the EG and CG1, EG and CG2, or CG1 and CG2 at either post-deployment or follow-up. Mean levels of depression differed for the EG and CG3 at post-deployment [$t(166) = -4.01$, $p < .001$], for CG1 and CG3 at post-deployment and follow-up [$t(114) = -3.06$, $p < .01$; $t(105) = -2.69$, $p < .01$] and for CG2 and CG3 at post-deployment [$t(149) = -2.27$, $p < .05$]. It seems that mean level of depression did not differ for the military groups at the different deployment stages, but the military groups seemed to have lower levels of depression than the civilian group.

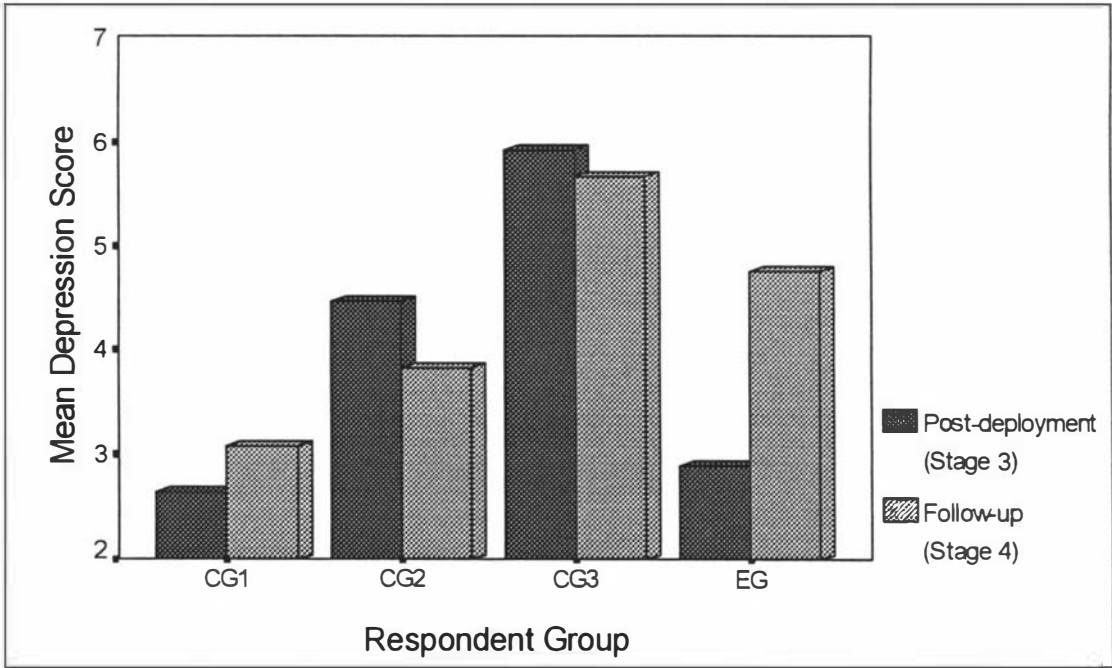


Figure 3-16: Mean levels of Depression at Stages 3 and 4 of the study (“post-deployment” and “follow-up”) for the Experimental Group (EG), Control Group 1 (CG1), Control Group 2 (CG2) and Control Group 3 (CG3).

3.3.3 *Incidence of Post-Traumatic Stress Disorder*

Various cut-off scores on the Mississippi Scale for Post Traumatic Stress Disorder - Military version (M-PTSD mil) have been used to classify respondents as “PTSD cases” or “non-PTSD cases”. For example, previous researchers have used cut-off scores of 107, 102, 100 and 94 (Keane, Caddell and Taylor, 1988; Vincent et al, 1994; McFall et al, 1990; Watson, 1990). To enable comparisons to be made with previous research, M-PTSD mil cut-offs were chosen to facilitate these comparisons. Two cut-offs were used: **94**, used in research with previous NZDF peacekeeping personnel (MacDonald et al, 1996) and NZ Vietnam Veterans (Vincent et al, 1991) and **102**, used in previous research with NZ Vietnam veterans (Chamberlain et al, 1994 and Vincent et al, 1994).

Cut-offs on the Civilian version of the M-PTSD scale (M-PTSD civ) were more difficult to set. The M-PTSD civ had not been as widely used as the M-PTSD mil and previous cutoffs were less readily available. The situation was further complicated by the fact that cut-offs on both versions of the scale needed to allow comparison between all four experimental groups and the three common stages of the experiment (i.e. Stages 1, 3 and 4). That is, it was important that the M-PTSD civ cut-offs were equivalent to the M-PTSD mil cut-offs, 94 and 102. Furthermore, it seemed that the distribution of M-PTSD civ scores was quite different from other samples. For example, the mean M-PTSD civ score for all Stage 1 respondents is considerably lower than the mean from previous research (e.g. Eustace, 1994).

A similar method to that employed by Eustace (1994) was used to set M-PTSD civ cut-offs. However, where Eustace used z scores derived from previous research (Long et al, cited in Eustace, 1994), it was possible to gain such data from within the current study. That is, sample characteristics from the use of the M-PTSD mil for the EG and CG1 at Stage 3 or Stage 4 could be used to set equivalent cut-offs on the M-PTSD civ. This is in keeping with Keane et al (1988) who advise that different cut-offs need to be developed to suit each situation and group. Stage 3 data was used as this was the biggest set of M-PTSD mil data available within the present study. It was determined that 94 and 102 were 3.5 and 4.2 standard deviations above the mean

respectively (considerably higher than those calculated by Eustace (1994) as the current sample distribution had a much lower mean). This corresponded to cut-off scores of 118 and 128 on the combined Stage 1 M-PTSD civ distribution. However, these cut-offs need to be used with caution due to the differences in sample distribution. The comparisons between groups on continuous M-PTSD T scores (i.e. in Section 3.3) will be more valid for comparisons involving M-PTSD civ scores.

Table 3-6, below, shows the incidence of PTSD for each group at each stage of the study using the cut-offs described above.

Table 3-6: The incidence of PTSD for each group at each stage of the study.

Cut-off		Experimental Group			Control Group 1			Control Group 2			Control Group 3		
Mil	Civ	1	3	4	1	3	4	1	3	4	1	3	4
94	118	0	3	3	0	0	0	0	0	0	0	0	1
102	128	0	1	3	0	0	0	0	0	0	0	0	0

N.B. The shaded areas denote the use of the M-PTSD mil; unshaded areas denote the use of the M-PTSD civ.

3.3.3.1 *Experimental Group (EG)*

Table 3-6 suggests that none of the EG could be classified as “PTSD cases” at Stage 1 of the study (i.e. before they deployed overseas). However, three (3.1% and 4.5%) of the EG are classified as “PTSD cases” using the 94 cut-off at post-deployment and follow-up (Stages 3 and 4 of the study) respectively. Not only does this suggest a change in PTSD incidence over the course of the deployment but it is slightly more than the 1% found for NZDF personnel on other peacekeeping missions (MacDonald et al, 1996). Using the 102 cut-off, one (1%) and three (4.5%) of the EG are classified as “PTSD cases” at Stages 3 and 4 of the study.

3.3.3.2 *Control Groups*

Only one of the CG respondents could be classified as a “PTSD case” at any stage of the study (one (1.3%) of the CG3 respondents at Stage 4). Even when using only that data collected from M-PTSD mil scales (which had the more reliable cut-offs), the

incidence rate was nil. That is, there were no “PTSD cases” within CG1 at post-deployment or follow-up (i.e. Stages 3 and 4 of the study respectively). The low number of “PTSD cases” meant that a reliable statistical analysis of the observed difference between PTSD incidence for the EG and the control groups could not be performed. However, deployment to Bosnia resulted in more “PTSD cases” than deployment on other than peacekeeping missions. Furthermore, deployment to Bosnia resulted in more “PTSD cases” than staying in NZ, either within the NZ Army or in the civilian sector.

3.3.4 Predicting PTSD and Depression

One of the aims of the study was to examine possible predictors of any mental health measures that are shown to change as a result of the deployment to Bosnia. As Sections 3.3.1 and 3.3.2 show, these were PTSD and depression. To this end, exploratory regression analyses were conducted to determine whether or not follow-up levels of PTSD symptoms and depression for the EG of soldiers who deployed to Bosnia could be predicted by different sets of independent variables.

Only 67 EG members completed the follow-up questionnaire so this limited the number of variables that could be entered into the analysis. Consequently, functional groupings of independent variables were used in a series of direct multiple regression analyses where these groups of independent variables were entered on Step 1. Six of these multiple regression analyses had PTSD symptoms at follow-up as the dependent variable and six had depression at follow-up as the dependent variable. (Analyses with stress measures as independent variables are presented in Section 3.6.)

3.3.4.1 Predicting PTSD Symptoms

Demographic Variables. Age, marital status, ethnic group, education and income were entered in the first analysis. Education was the only variable able to predict PTSD symptoms at follow-up, with lower levels of education being associated with higher levels of PTSD symptoms [$F(5,58) = 2.80, p < .05; \beta = -.65, p < .001$].

Military Variables. Rank, corps, number of operational deployments, number of other deployments and length of service were entered in the second analysis. Corps was the only variable able to predict PTSD symptoms at follow-up [$F(5,31) = 4.76$, $p < .01$; $\beta = -.48$, $p < .05$]. Further examination of the results reveals that RNZAC, RNZA and RNZIR (armoured, infantry and artillery) have the highest mean levels of PTSD symptoms.

Stage 1 Deployment Questions. Responses from five questions that were included in the pre-deployment questionnaire: “Was the amount of notice you had for this deployment just right, too little or too much?”; “How much confidence do you have in you pre-deployment training?”; “How much do you want to go on this deployment?”; “How worried or anxious are you about this deployment?”; and “How well do you think you will cope with the deployment?” were entered. Of these, “confidence in pre-deployment training” was able to predict PTSD symptoms at follow-up, with less confidence in pre-deployment training being associated with higher levels of PTSD symptoms [$F(5,56) = 3.30$, $p < .05$; $\beta = -.42$, $p < .01$].

Stage 2 Deployment Questions. None of the responses from five questions that were included in the mid-deployment questionnaire: “How stressful/difficult are you finding this deployment?”; “How much are you enjoying this deployment?”; “How much difficulty do you have keeping your morale up?”; “How well do you feel you are coping with the deployment?” and “How worried are you about your family at home?” were able to predict PTSD symptoms at follow-up.

Stage 3 Deployment Questions. The following questions from the post-deployment questionnaires were entered in another direct multiple regression analysis: “How successful do you feel the mission was?”; “How much did you enjoy the deployment?”; “How well do you feel you coped with the deployment?”; “How stressful/difficult did you find the deployment?”; “How much ‘in-country’ leave did you have during the deployment?”; and “How much ‘out-of-country’ leave did you have during the deployment?”. None of these were able to predict PTSD symptoms at follow-up.

Stage 4 Deployment Questions. Results from six questions included in the follow-up questionnaires: “To what extent do you feel you have settled back into life in New Zealand?”; “To what extent do you feel you have settled back into your job in New Zealand?”; “How satisfied are you with the support you have received from the Army since your deployment?”; “How satisfied are you with the support your family received from the Army during your deployment?”; “How satisfied are you with the support your family has received since your deployment?” and “Other than regular checkups, how many times have you visited a health professional in the last six months?” were entered in another multiple regression analysis. How much respondents said they had settled back into life in NZ was a predictor of PTSD symptoms, and to a lesser extent, how satisfied respondents were with the support their family received during the deployment. Lower levels of settledness and satisfaction with family support were associated with higher levels of PTSD symptoms at follow-up [$F(6,60) = 7.06, p < .001$; β (settled) = $-.65, p < .001$; β (satisfied) = $-.25, p < .05$].

3.3.4.2 Predicting Depression

Another six direct multiple regression analyses were conducted with the same groups of independent variables described above entered in Step 1, but with depression at follow-up as the dependent variable.

Demographic Variables. Education was the only demographic variable entered that was able to predict depression at follow-up. It seems that higher levels of education are associated with lower levels of depression [$F(5,58) = 3.33, p < .05$; $\beta = -.40, p < .01$].

Military Variables. Corps was the only one of the military variables entered that was able to predict level of depression at follow-up [$F(4,24) = 3.50, p < .05$; $\beta = -.55, p < .05$]. Further examination of the results reveals that RNZAC, RNZ Sigs, RNZA and RNZIR (armoured, signals, artillery and infantry) have the highest mean levels of depression.

Stage 1 Deployment Questions. How respondents felt about the amount of notice they received at pre-deployment was the only one of the questions relating to the pre-deployment stage that was able to predict depression at follow-up. It seems that dissatisfaction with the amount of notice was associated with higher levels of depression at follow-up [$F(5,56) = 2.53, p < .05; \beta = .34, p < .05$].

Stage 2 Deployment Questions. How stressful or difficult respondents were finding the deployment during the deployment itself was able to predict depression at follow-up. The greater the amount of stress or difficulty experienced during the deployment, the higher the level of depression at follow-up [$F(5,52) = 3.20, p < .05; \beta = -.53, p < .01$].

Stage 3 Deployment Questions. None of the mid-deployment questions entered in the analysis were able to predict levels of depression at follow-up.

Stage 4 Deployment Questions. To what extent respondents felt that they had settled back into life in NZ was able to predict depression at follow-up. Feeling very settled was associated with lower levels of depression [$F(6, 60) = 4.89, p < .001; \beta = -.55, p < .001$].

3.4 Stressors of the Peacekeeping Experience

Two scales, the “Hassles Scale” and the “Deployment Hassles Scale”, were used to examine the extent and nature of the stressors involved in the peacekeeping experience. Various combinations of these scales were also used for the Control Groups so that the extent and nature of the stressors involved in the peacekeeping situation could be compared with those involved in deploying overseas on other than peacekeeping duties, and remaining in NZ, either within the NZ Army or in the civilian sector. However, when making comparisons between the respondent groups it is important to keep in mind the differences between key demographic variables presented in Section 3.1.

3.4.1 Daily Hassles

Table 3-7 presents the number of stressors (daily hassles) experienced over the last few days by the EG, at all five stages of the study. The majority of respondents reported fewer than 19 hassles at each stage of the study (83%, 88%, 89% and 90% for Stages 1 to 4 respectively). Whilst these percentages are roughly equivalent, fewer respondents (40%) reported less than 10 hassles at Stage 1 (“pre-deployment”) than at any of the other stages and more respondents (7%) reported greater than 30 hassles. It therefore seems as if the pre-deployment stage resulted in the highest number of hassles for EG respondents.

Table 3-7: Number of stressors (hassles) experienced over the last few days at all stages of study by members of the Experimental Group (EG).

Number of hassles	Percentage of respondents			
	Stage 1	Stage 2	Stage 3	Stage 4
< 10	40	61	73	77
10 – 19	43	27	16	13
20 – 29	11	11	8	8
30 – 39	6	2	2	2
40 +	1	-	1	1

Figures 3-17, 3-18 and 3-19 present bar-charts of the number of hassles for the EG and CGs, at Stage 1 (“pre-deployment”), Stage 3 (“post-deployment”) and Stage 4 (“follow-up”) respectively. These bar-charts, together with results from cross-tabulations of the data they contain, allow comparisons to be made between the distributions of number of hassles reported by the respondent groups at each stage of the study.

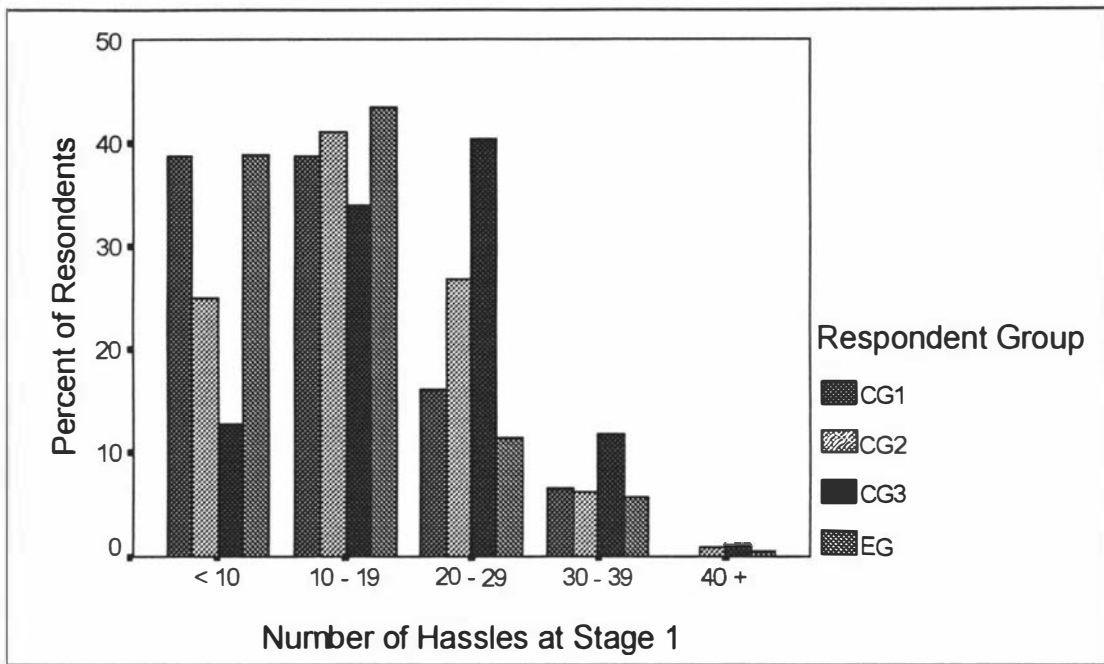


Figure 3-17: Number of daily hassles for each respondent group at Stage 1 of the study (“pre-deployment”).

Figure 3-17 suggests that the pattern of number of hassles reported by EG respondents is most similar to CG1 than the other groups at Stage 1 of the study (“pre-deployment”). It is also apparent that more CG3 respondents have reported higher numbers of hassles than the other groups at this “pre-deployment” stage. Results of cross-tabulation analyses across all four groups suggest that the distributions of number of hassles are different ($\chi^2(12) = 49.35, p < .01$). Inspection of the relationship between the EG and each of the Control Groups in turn, suggests that there is no difference between the EG and CG1, but there are differences between the EG and CG2 ($\chi^2(4) = 14.16, p < .01$) and between the EG and CG3 ($\chi^2(4) = 44.32, p < .01$).

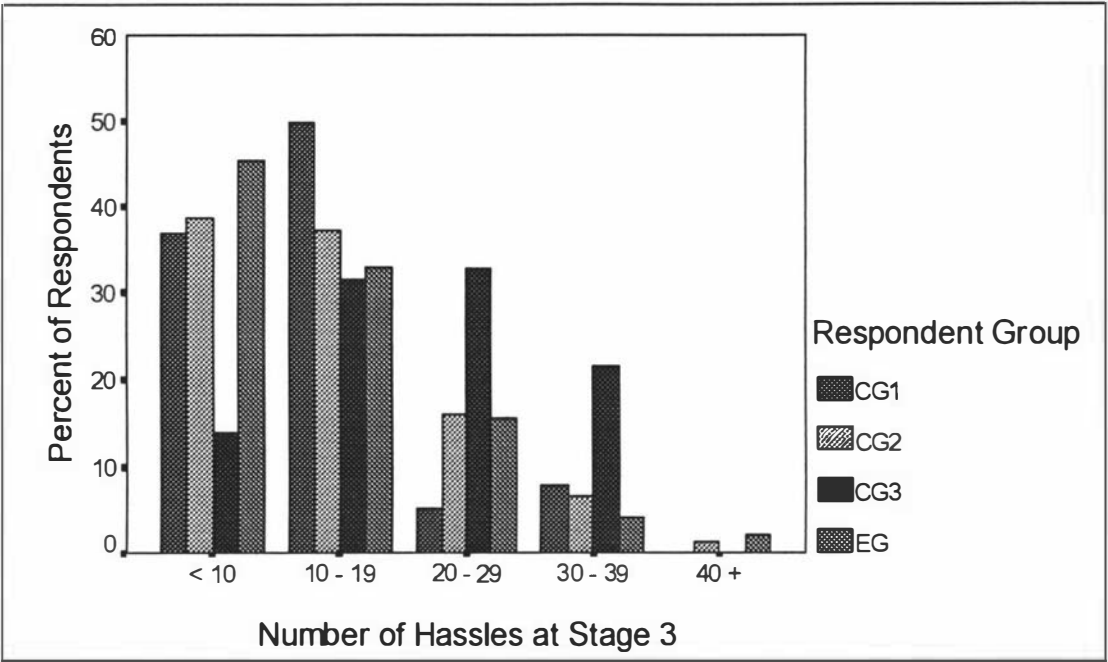


Figure 3-18: Number of daily hassles for each respondent group at Stage 3 of the study (“post-deployment”).

Again, CG3 respondents have reported higher numbers of hassles at Stage 3 (“post-deployment”) than respondents from the other three groups. Results from cross-tabulations suggest that the distribution of number of hassles is different across the groups ($\chi^2(12) = 46.25, p < .01$). Examining the relationship between the EG and each of the Control Groups in turn, suggests that there is no difference between the EG and CG1, and the EG and CG2; but there is a significant difference between the EG and CG3 ($\chi^2(4) = 32.15, p < .01$).

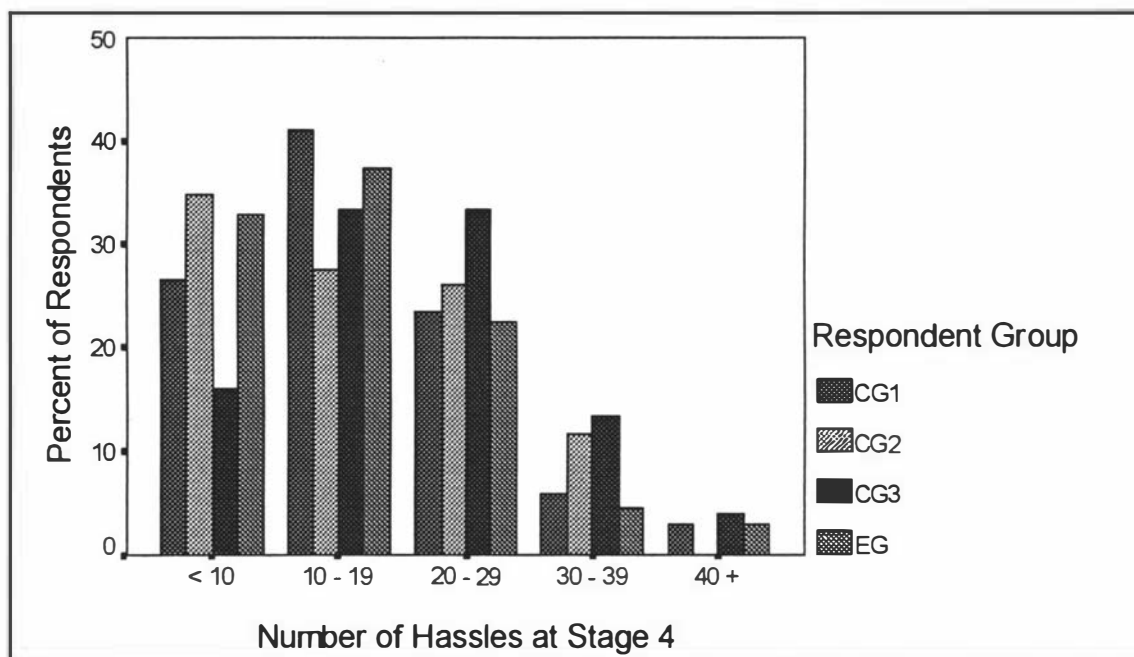


Figure 3-19: Number of daily hassles for each respondent group at Stage 4 of the study (“follow-up”).

The same patterns are apparent at Stage 4 (“follow-up”) as at Stages 1 and 3. That is, the number of hassles reported by CG1 respondents is similar to those reported by EG respondents and CG3 respondents report higher numbers of hassles. Results from cross-tabulations suggest that there is no difference in the distribution of number of hassles across the groups, and no difference between the EG and any of the Control Groups.

Overall, it seems that CG1, the group who deployed overseas on other than peacekeeping duties, is the most similar group to the EG, in terms of reported levels of stress at each stage of the study. Furthermore, it seems that more CG3 (i.e. civilian) respondents reported higher levels of stress at each stage of the study than the “military” groups.

The following tables, which report the ten most frequently reported hassles and ten most severe hassles at each stage of the study for the EG, along with relevant percentages for Control Group personnel, allow some understanding of the nature of the stressors involved in peacekeeping duties.

Table 3-8: The ten most frequently reported daily hassles for the Experimental Group (EG) at Stage 1 of the study (“pre-deployment”), along with frequency of these hassles for the Control Groups.

Hassle	Percentage reporting as frequent			
	EG	CG1	CG2	CG3
Fellow workers/contingent members	67	31	63	66
Your supervisor, employer or superior	67	37	53	48
The nature of your work	53	53	63	70
Amount of free time	50	46	51	62
Your work load	50	65	59	77
Sex	50	23	21	32
Intimacy	46	30	31	32
Meeting deadlines or goals on the job	43	60	56	67
Physical exercise	43	39	46	63
Taking care of paperwork/administration	39	52	53	55

Table 3-9: The ten most severe daily hassles for the Experimental Group (EG) at Stage 1 of the study (“pre-deployment”), along with severity of these hassles for the Control Groups.

Hassle	Percentage reporting as severe			
	EG	CG1	CG2	CG3
Amount of free time	10	3	7	8
Sex	10	0	3	0
Intimacy	9	0	4	1
Time spent with family	9	3	5	2
Enough money for necessities	8	5	11	7
Enough money for extras	7	0	10	7
Your supervisor, employer or superior	6	2	5	5
Recreation & entertainment	6	2	5	1
Enough money for emergencies	5	0	10	9
Your workload	5	5	11	17

Experimental Group (EG). As Table 3-8 shows, the most frequently reported hassles at pre-deployment were those related to relationships with other people (e.g. colleagues, superiors and partners). This is perhaps not surprising as the pre-deployment period saw a number of people working together for the first time. For many EG respondents it also involved separation, and no doubt some emotional distancing from family. Hassles related directly to the work involved in preparing to go away; namely the nature of your work, workload and taking care of paperwork were also reported as frequent hassles. Not surprisingly, the pre-deployment period is a busy one with amount of free time, and meeting deadlines or goals on the job reported as frequent hassles. This may also be why physical exercise is frequently reported as a hassle. Table 3-9 suggests that the most severe hassles (i.e. those which

received the highest rating by the largest number of respondents) for the EG at the pre-deployment period were related to not being able to spend time as they would like and relationships with family/partner (e.g. amount of free time, time spent with family, recreation/entertainment, workload, sex and intimacy). Money-related hassles are also reported as severe (e.g. enough money for necessities, extras and emergencies).

Control Groups. There are a number of differences in reported hassles between the EG and the Control Groups at the “pre-deployment” stage. The greatest difference is that the EG reports sex and intimacy as both more frequent and more severe hassles than any of the Control Groups. Other differences are that the items relating to relationships with other personnel are reported as a more frequent hassle for the EG than for CG1, the other group that deployed overseas. Although amount of free time is a more severe hassle for the EG than for any of the Control Groups, the civilian group (CG3) reported this as a more frequent hassle than the three military groups (EG, CG1 and CG2). The money-related hassles are more severe for CG2, the group most closely matched with the EG for rank and age, while workload was a more severe hassle for the civilian group, CG3. However, this may well be related to the fact that a large proportion of the CG3 respondents are classified in the “Legisators, Administrators & Managers” occupation group.

Table 3-10: The ten most frequently reported and ten most severe daily hassles for the Experimental Group (EG) at Stage 2 of the study (“mid-deployment”).

Hassle	% reporting as frequent	Hassle	% reporting as severe
Sex	65	Sex	30
Intimacy	58	Intimacy	20
Fellow workers/ Contingent members	58	Your supervisor, Employer or superior	7
Physical exercise	54	Clients... (people you provide a service for)	6
Nature of your work	50	Time spent with family	6
Your work load	50	Fellow workers/ contingent members	6
Amount of free time	45	Amount of free time	5
News events	43	Health or well-being of family member	3
Weather/climate	43	Recreation & Entertainment	3
Your supervisor, Employer or superior	43	Workload, smoking, drinking, news events, work	3 each

Experimental Group (EG). Sex and intimacy continued to be reported as frequent and severe hassles for the EG at the mid-deployment stage. In fact, the number of EG respondents who reported these as severe has increased markedly from pre-deployment. Relationships with other personnel (fellow contingent members and superiors) also continued to be frequently reported and severe at the mid-deployment stage. The work itself and workload were frequently reported as hassles as were the climate, news events and physical exercise. Not surprisingly, family concerns (time spent with family, health and well-being of a family member) were reported as more severe hassles of this mid-deployment stage.

Table 3-11: The ten most frequently reported daily hassles for the Experimental Group at Stage 3 of the study (“post-deployment”), along with frequency of these hassles for the Control Groups.

Hassle	Percentage reporting as frequent			
	EG	CG1	CG2	CG3
Fellow workers/contingent members	72	40	57	68
Your supervisor, employer or superior	63	61	47	47
Sex	59	24	24	29
The nature of your work	56	40	61	68
Your work load	52	41	55	71
Intimacy	47	37	34	35
Your environment	46	16	28	37
Physical exercise	44	58	50	61
Amount of free time	39	24	42	62
Your physical appearance	37	34	35	50

Table 3-12: The ten most severe daily hassles for the Experimental Group at Stage 3 of the study (“post-deployment”), along with severity of these hassles for the Control Groups.

Hassle	Percentage reporting as severe			
	EG	CG1	CG2	CG3
Sex	19	0	0	3
Intimacy	17	3	0	3
Your supervisor, employer or superior	17	0	3	6
Fellow workers/contingent members	8	3	11	4
Amount of free time	7	0	4	5
Time spent with family	6	8	3	4
Health or well-being of a family member	5	5	4	4
Family-related obligations	5	5	4	1
Clients..(people you provide a service for)	5	0	5	4
Recreation & entertainment	5	0	3	0

Experimental Group (EG). It is also not surprising that the pattern of hassles reported at post-deployment, shown in Tables 3-11 and 3-12, is similar to that at mid-deployment, as the post-deployment questionnaires were completed in the last few days in theatre. Relationships with other people (fellow contingent members and superiors) and sex and intimacy continued to be frequent and severe hassles, as did hassles relating to work and free time. The environment was also a frequent hassle for the EG at this stage of the study. There is perhaps a slight shift in focus in that respondents were anticipating the return to NZ, with physical appearance making its first appearance as a frequent hassle and three family-related stressors being rated as severe hassles.

Control Groups. Comparisons with Control Groups yield similar patterns to Stage 1 (“pre-deployment”) comparisons. Sex and intimacy are again more severe and frequent stressors for the EG than the Control Groups. Fellow workers/contingent members and superiors are more frequent and severe hassles for the EG than the Control Groups (except for the severity of fellow workers for CG2). Not surprisingly, the environment is a more frequent hassle for the EG than for any other group and time spent with family is a more severe hassle for the two groups who deployed (EG and CG1).

Table 3-13: The eleven most frequently reported daily hassles for the Experimental Group (EG) at Stage 4 of the study (“follow-up”), along with frequency of these hassles for the Control Groups.

Hassle	Percentage reporting as frequent			
	EG	CG1	CG2	CG3
The nature of your work	57	62	65	65
Your supervisor, employer or superior	57	59	48	53
Physical exercise	55	65	38	57
Your work load	55	53	58	73
Amount of free time	52	35	44	61
Taking care of paperwork/administration	51	47	45	57
Fellow workers	48	56	58	72
Recreation & entertainment	46	21	44	36
Enough money for extras	45	56	58	62
Enough money for necessities	43	53	52	56
Family-related obligations	43	47	32	45

(NB. Eleven hassles are presented as numbers 10 and 11 were reported by an equal number of respondents)

Table 3-14: The ten most severe daily hassles for the Experimental Group (EG) at Stage 4 of the study (“follow-up”), along with severity of these hassles for the Control Groups.

Hassle	Percentage reporting as severe			
	EG	CG1	CG2	CG3
The nature of your work	21	3	7	7
Your work load	14	0	9	7
Amount of free time	10	3	9	5
Enough money for extras	9	3	7	4
Time spent with family	8	3	7	3
Health or well-being of a family member	6	6	6	4
Intimacy	6	0	3	3
Your supervisor, employer or superior	6	3	4	9
Meeting deadlines or goals on the job	6	3	6	4
Physical exercise	6	3	1	3
Car maintenance	6	3	4	3

Experimental Group (EG). Tables 3-13 and 3-14 reflect considerable changes in the patterns of frequent and severe hassles for the EG at Stage 4 (“follow-up”). Whilst hassles relating to work and relationships with other people are again to the fore as frequent and severe hassles (with, not surprisingly, “nature of your work” being the most frequently reported and the most severe hassle), sex and intimacy have disappeared as frequent stressors and sex is no longer rated as a severe hassle. In addition, money-related hassles have been more frequently endorsed as hassles at this follow-up stage than at any other stage of the deployment.

Control Groups. In comparison with the Control Groups, there is a very marked difference between the EG and the Control Groups on the work-related hassles, with EG respondents rating these as considerably more severe than the other groups. It is also apparent, from Table 3-14, that EG respondents have rated all items (except health or well-being of a family member which is rated as equal in severity) as more severe than the other deploying group, CG1. Furthermore, Table 3-13 shows that many of the hassles are reported more frequently by the civilian group (CG3) (e.g. fellow workers and work load).

3.4.2 Deployment Hassles

The members of the two groups who deployed overseas, that is the Experimental Group (EG) and Control Group 1 (CG1), completed a “Deployment Hassles Scale” in addition to the more general “Hassles Scale” (at Stages 1, 2 and 3 for the EG and Stages 1 and 3 for CG1). The Deployment Hassles Scale had different numbers of items at each administration so it is not meaningful to compare numbers of hassles reported, as for the Hassles Scale. However, it is still possible to examine those Deployment Hassles that were reported as frequent and severe for each group at each deployment stage. This will allow some insight into the different stressors involved in deploying overseas on peace-keeping duties and non-peacekeeping duties.

Table 3-15: The ten most frequently reported deployment hassles for the Experimental Group (EG) at Stage 1 of the study (“pre-deployment”), along with frequency of these hassles for Control Group 1 (CG1).

Deployment Hassle	Percent reporting as frequent	
	EG	CG1
Pre-deployment information	64	62
Rumours	58	38
Separation	58	44
Restrictions/lack of freedom	57	26
Boredom	54	21
Lack of control over events	51	33
Command relationship	48	23
Leave	47	31
Financial concerns/allowances	45	57
Supplies/personal equipment	43	36

Table 3-16: The ten most severe deployment hassles for the Experimental Group (EG) at Stage 1 of the study (“pre-deployment”), along with severity of these hassles for Control Group 1 (CG1).

Deployment Hassle	Percent reporting as severe	
	EG	CG1
Separation	12	5
Pre-deployment information	10	5
Boredom	8	0
Restrictions/lack of freedom	8	2
Financial concerns/allowances	8	2
Lack of control over events	8	0
Leave	7	3
Command relationship	6	0
Rumours	5	0
Travel, travel arrangements	5	0

Experimental Group (EG). The most frequently reported deployment hassles at pre-deployment for the Experimental Group (EG) were those regarding information about the deployment (i.e. pre-deployment information and rumours) and these were also reported as severe hassles (see Tables 3-15 and 3-16). In fact, almost the same group of deployment hassles appear as most frequent and most severe. Separation was already an issue for EG respondents, probably because many respondents were separated from their families throughout pre-deployment training, something which may have been exacerbated by the fact that leave also appears as both a frequent and severe deployment hassle. EG respondents were also already feeling that they were restricted in what they could or could not do and that they lacked control over events, as these appeared as both frequent and severe deployment hassles. Boredom was also an issue at this stage. In addition, it seems that command relationship was both a frequent and severe deployment hassle. Other deployment hassles at this pre-deployment stage included issues to do with preparation for the deployment, such as travel arrangements, supplies and financial concerns/allowances.

Control Group 1 (CG1). Separation and pre-deployment information were also the most frequent and severe deployment hassles for CG1, the group who deployed overseas on other than peacekeeping duties. To a certain extent, financial concerns and allowances were also an issue. However, none of the other deployment hassles that were either frequent or severe for the EG seemed to be an issue for CG1 (e.g. rumours, restrictions/lack of freedom, boredom, lack of control over events, command relationship, supplies/personal equipment). This may reflect the fact that EG respondents were generally lower ranking than CG1 respondents or that EG respondents were part of a large contingent group. They may also point to some differences in preparing for a non-operational, as opposed to a peacekeeping deployment.

Table 3-17: The ten most frequently reported and ten most severe deployment hassles for the Experimental Group (EG) at Stage 2 of the study (“mid-deployment”).

Hassle	% reporting as frequent	Hassle	% reporting as severe
Restrictions/lack of freedom	75	Boredom	15
Separation	68	Separation	13
Boredom	66	Restrictions/lack of freedom	11
Rumours	65	Lack of control over events	9
Language differences	65	Sending/receiving mail	9
Sending/receiving mail	62	Financial concerns/allowances	8
Lack of control over events	59	Language differences	7
Information about the deployment	55	Making/receiving phone calls	6
Relationship with locals	50	Command relationship	6
Command relationship	47	Working with the UN	6
		Posting on RTNZ	6

(NB. Eleven hassles are presented as numbers 8, 9,10 and 11 were reported as severe by an equal percentage of respondents)

Experimental Group (EG). Table 3-17 shows that several of the deployment hassles that were reported as frequent or severe at the pre-deployment period also appear as frequent and/or severe during deployment. Restrictions/lack of freedom were reported by three-quarters of EG respondents as frequent deployment hassles. Separation is the second most highly reported deployment hassle and also the second most severe deployment hassle. In addition, issues to do with communication home are reported as either frequent and/or severe (e.g. sending/receiving mail and making/receiving phone calls). Boredom remains an issue as does information about the deployment, rumours, command relationship and financial concerns/allowances. Not surprisingly, other deployment hassles relating to the situation in Bosnia also appear during this stage of the deployment. Language differences appears as both a frequent and severe deployment hassle, relationship with locals appears as a frequent deployment hassle and working with the UN appears as one of the more severe deployment hassles. It is interesting to note that even at the mid-point of the deployment, posting on return to NZ is also one of the more severe deployment hassles.

Table 3-18: The ten most frequently reported deployment hassles for the Experimental Group (EG) at Stage 3 of the study (“post-deployment”), along with frequency of these hassles for Control Group 1 (CG1).

Deployment Hassle	Percent reporting as frequent	
	EG	CG1
Rumours	70	37
Date of RTNZ	70	22
Restrictions/lack of freedom	67	40
Boredom	58	61
Lack of control over events	57	58
Separation	55	71
Posting on RTNZ	54	24
Language differences	50	32
Command relationship	48	42
Financial concerns/allowances	48	63

Table 3-19: The eleven most severe deployment hassles for the Experimental Group (EG) at Stage 3 of the study (“post-deployment”), along with severity of these hassles for Control Group 1 (CG1).

Deployment Hassle	Percent reporting as severe	
	EG	CG1
Date of RTNZ	26	0
Restrictions/lack of freedom	16	0
Boredom	12	3
Posting on RTNZ	9	5
Leave	9	3
Separation	8	11
Lack of control over events	7	8
Travel, travel arrangements	7	0
Command relationship	6	3
Language difficulties	5	0
Rumours	5	3

(NB. Eleven hassles are presented as numbers 10 and 11 were reported by an equal percentage of respondents)

Experimental Group (EG). Similar deployment hassles appear as frequent and/or severe at the post-deployment stage as at the during deployment stage for the EG. For example, rumours, restrictions/lack of freedom, boredom, lack of control over events, language differences and command relationship. This is not surprising given that the EG was still in Bosnia when they completed this questionnaire. However, the emphasis within this set of deployment hassles has shifted slightly to reflect the fact that returning to NZ is imminent, with, for example, separation appearing further down the lists of frequent and severe deployment hassles and posting on RTNZ appearing higher up within each list. The date of return to NZ became a significant issue and this may be due to the fact that the return of the contingent was delayed one

week. Travel/travel arrangements and leave have also reappeared, from the pre-deployment stage, as severe deployment hassles.

Control Group 1 (CG1). In order to make a valid comparison of the deployment hassles for the EG and CG1 at the post-deployment stage, the reader must keep in mind that this questionnaire was administered to the EG while they were still in Bosnia but CG1 personnel completed the questionnaire within several weeks of returning to NZ. Some of the differences may therefore be due to this difference in timing. Not surprisingly, then, issues such as date of RTNZ, rumours, restrictions/lack of freedom, language differences, travel/travel arrangements and posting on RTNZ were not reported as frequently, or with such severity, as for the EG. Interestingly, separation proved to be both more frequent and more severe for CG1 than for the EG. This may be because CG1 respondents found it extra stressful if they were again separated from their families after having just returned to NZ. Financial concerns/allowances were also a more severe deployment hassle for CG1 than for the EG at the post-deployment stage of the study.

3.5 Peacekeeping Exposure Scale

The Peacekeeping Exposure Scale (PES) was completed by 134 members of the EG and CG1 at the post-deployment stage (Stage 3) of the study.

3.5.1 Factor Analysis

A principal components factor analysis with varimax rotation was performed on the PES in order to provide factor scores for multiple regression analysis and psychometric information for further development of the scale. The factor analysis yielded seven factors with eigenvalues greater than 1.0, and these factors accounted for 67.08 % of the total variance.

The method employed by Orsillo et al (1998) to refine the measurement of the constructs was then used. That is, items with factor loadings of less than 0.50 were removed. There were two such items: "How often were you armed?" and "How often

did you fire your weapon?”. Not surprisingly, these were also the only items which had nearly equal factor loadings on more than one factor.

Another principle components factor analysis with varimax rotation was conducted on the resulting 18 items. This analysis revealed the same seven factors with eigenvalues greater than 1.0, but the new factor solution accounted for more of the total variance (71.57%). This factor solution is presented in Table 3-20, over.

The small number of items loading onto some of the factors was of concern, and consideration was given to “forcing” the analysis to produce fewer factors. However, it was felt that it was better to present the unforced solution in this initial report of the PES. When the PES is administered to a larger sample in the future it would then be unlikely that there would be any new factors, perhaps just a redistribution of items. As the small number of items loading onto some of the factors indicates a possible instability, only factor loadings of 0.5 and greater are reported in Table 3-20.

The first factor, “*safety*”, consists of five items relating to safety or potential danger, for example “How often did you fear for your life or personal safety?” and “How often were you in an area receiving small arms or sniper fire?”, and accounts for 16.98% of the variance. The second factor, “*witnessing unpleasant events*” consists of items to do with seeing unpleasant things, like people suffering severe illness/ starvation/ mutilation and accounts for 9.96% of the variance. The two items which make specific mention of the plight of the local people loaded onto the third factor, “*local people*”, which accounts for 9.96% of the variance. The items that specifically mention death or body handling load on the fourth factor, “*death or serious injury*”, which accounts for 9.27% of the variance. The fifth factor is a difficult one to name but seems to include things that are typical of more traditional combat. One of the items that was removed prior to this second analysis (Item 15: “How often did you fire your weapon?”) had previously loaded on this factor. It accounts for 9.20% of the variance. Items reflecting dangerous events that actually happened to the peacekeepers or those close to them (rather than potential danger like the first factor) loaded on the seventh factor, “*dangerous incidents experienced by self or colleagues*”, which accounts for 8.30% of the variance. Finally, the seventh factor, “*personal situation*” includes items that describe living conditions and accounts for 7.91% of the

variance. The other item that was removed prior to this analysis (Item 14: “How often were you armed?”) had previously loaded on this factor.

All subsequent analyses were based on the 18-item version of the PES.

Table 3-20: Factors and factor loadings for the PES.

No	Item	Factor Loading						
		1	2	3	4	5	6	7
<i>Safety</i>								
16.	Encounter artillery or mortar fire	.814						
2.	Fear for life or personal safety	.711						
12.	In an area receiving sniper or small arms fire	.694						
1.	Experience local unrest (riots, hostility towards you, etc)	.555						
7.	Bothered by feeling responsible for the safety of other people	.507						
<i>Witnessing unpleasant incidents</i>								
4.	See people suffering severe illness/ starvation/ mutilation		.829					
17.	Encounter mines, bombs or booby traps		.670					
3.	Witness a disturbing scene or incident		.641					
<i>Local people</i>								
6.	Bothered by quality of life of the local people			.881				
5.	Bothered by incidents involving children			.839				
<i>Death or serious injury</i>								
10	Handle bodies				.889			
8	Witness someone being killed or seriously injured				.678			
<i>Traditional combat</i>								
13	Exposed to NBC threat					.912		
11	Treat casualties					.699		
<i>Dangerous incidents experienced by self or colleagues</i>								
9	Other UNPROFOR personnel killed or seriously injured						.776	
18	Ambushed, detained or threatened with a weapon						.510	
<i>Personal situation</i>								
20	Bothered by your living conditions							.853
19	Feel that your freedom was restricted							.715
Total Variance Explained		16.98	9.96	9.96	9.27	9.20	8.30	7.91

(NB. Only factor loadings above 0.5 are reported)

3.5.2 Reliability

3.5.2.1 Internal consistency

Cronbach alpha was 0.79 for the whole scale (18 item version). Cronbach alpha coefficients for each of the factors are presented in Table 3-21:

Table 3-21: Cronbach alpha coefficients and mean item-total correlations for each of the PES factors.

Factor	Cronbach Alpha	Mean Item-total Correlation
1. <i>Safety</i>	.790	.745
2. <i>Witnessing unpleasant events</i>	.703	.792
3. <i>Local people</i>	.755	.896
4. <i>Death or serious injury</i>	.514	.836
5. <i>Traditional combat</i>	.672	.873
6. <i>Dangerous incidents experienced by self or colleagues</i>	.501	.817
7. <i>Personal situation</i>	.451	.803

Item-total correlations were also calculated as a measure of internal consistency for the whole scale and for each of the factors. Item-total correlations ranged from 0.11 (“How often were you bothered by your living conditions?”) to 0.68 (“How often did you witness a disturbing scene or incident?”) for the whole scale, with a mean item-total correlation of 0.47. Item-total correlations ranged from 0.65 to 0.79 for Factor 1; 0.78 to 0.80 for Factor 2; 0.89 to 0.90 for Factor 3; 0.72 to 0.95 for Factor 4; 0.83 to 0.92 for Factor 5; 0.78 to 0.86 for Factor 6 and 0.73 to 0.88 for Factor 7. Mean item-correlations for each factor can be found in Table 3-21.

3.5.2.2 Split-half Reliability

Split-half reliability was measured using Guttman split-half and Spearman-Brown coefficients. These were, respectively, 0.74 and 0.74. Cronbach alpha for each half was 0.70 and 0.64.

3.5.3 Multiple Regression Analysis

As principle components analysis produces orthogonal factors, this meant that all seven factors could be entered in the same step of the regression analyses. Two linear regression analyses were conducted. The dependent variables were the Stage 4 (follow-up) variables for those outcome measures for which a significant change over the deployment had been found for the EG but not for any of the control groups. That is, PTSD symptoms and depression. Results from these two analyses can be found in Table 3-22.

Table 3-22: Results from multiple regression analyses with PES factors as independent variables and PTSD symptoms and depression at follow-up as dependent variables.

Predictor variable	Standardised Beta (β)	
	PTSD	Depression
Factor 1. <i>Safety</i>	.006	-.080
Factor 2. <i>Witnessing unpleasant events</i>	.274*	.229
Factor 3. <i>Local people</i>	-.122	-.081
Factor 4. <i>Death or serious injury</i>	.667***	.287
Factor 5. <i>Traditional combat</i>	.069	-.060
Factor 6. <i>Dangerous incidents experienced by self or colleagues</i>	.115	-.147
Factor 7. <i>Personal situation</i>	.075	.023
R	.667	.368
R Square	.445	.136
Adj R Square	.348	-.015
F	4.590***	.898

* $p < .05$

** $p < .01$

*** $p < .001$

3.5.3.1 PTSD

Table 3-22 shows that the PES is significantly associated with PTSD symptoms at follow-up. In particular, PTSD symptoms at follow-up can be predicted by scores on two factors of the PES; Factors 2 and 4, “*Witnessing unpleasant events*” and “*Death or serious injury*”.

3.5.3.2 Depression

The results in Table 3-22 show that peacekeeping exposure, as measured by the PES, does not predict depression at follow-up.

3.6 Peacekeeping Stress and Mental Health

3.6.1 Intercorrelations

Intercorrelations were calculated for all of the “stress” scales completed by the EG at the different stages of the study. That is, daily hassles at Stages 1, 2, 3, and 4 of the study (pre-deployment, mid-deployment, post-deployment and follow-up); deployment hassles at Stages 1, 2 and 3 of the study (pre-deployment, mid-deployment and follow-up) and the seven PES factors. Intercorrelations (Pearson's correlation coefficients) for daily hassles and deployment hassles ranged from 0.276 to 0.793. All were significant. Hassles severity and deployment hassles severity for the same stage of the study (pre-deployment daily hassles and deployment hassles, mid-deployment daily hassles and deployment hassles and post-deployment daily hassles and deployment hassles) were particularly highly correlated, with Pearson's correlation coefficients of 0.744, 0.793 and 0.757 respectively (all $p < 0.001$).

Intercorrelations of daily and deployment hassles with the PES scales were much lower, with Pearson's coefficients ranging from 0.000 to 0.441. It seems, therefore, that on the whole, the PES is measuring different things from the hassles scales.

A series of statistical analyses were then conducted to investigate whether daily and deployment hassles could predict PTSD and depression, the two mental health outcome measures that changed significantly over the course of the deployment. These analyses also compared hassles with peacekeeping exposure as a predictor of PTSD symptoms.

3.6.2 Predicting PTSD Symptoms

In order to reduce the number of variables for multiple regression analyses and because the hassles severity scores were so highly correlated, a principal components factor analysis with varimax rotation was performed on the daily hassles and deployment hassles severity scores. Two factors emerged, which together accounted for 76.00% of the variance. The first factor, “*pre- and mid-deployment hassles*”, consists of all Stage 1 and 2 hassles severity scores. That is, daily hassles severity at pre-deployment and mid-deployment, and deployment hassles severity at pre-deployment and mid-deployment. This factor accounted for 42.35% of the variance. The second factor, “*post-deployment hassles*”, which accounted for 33.69% of the variance, consists of all Stage 3 and 4 hassles severity scores. That is, daily hassles severity at post-deployment and follow-up and deployment hassles severity at post-deployment. Factor loadings can be found in Table 3-23.

Table 3-23: Factors and factor loadings for the daily hassles and deployment hassles severity scores.

	Factor Loading	
	Factor 1	Factor 2
<i>Pre- and mid-deployment hassles</i>		
Deployment hassles at pre-deployment	.885	
Hassles at pre-deployment	.862	
Deployment hassles at mid-deployment	.814	
Hassles at mid-deployment	.708	
<i>Post-deployment hassles</i>		
Hassles at post-deployment		.911
Hassles at follow-up		.858
Deployment hassles at post-deployment		.653
Total Variance Explained	42.35	33.69

(NB. Only factor loadings above 0.5 are reported)

Hierarchical multiple regression analysis was then used to determine the relative contribution of these two “hassles” factors and the “*witnessing unpleasant events*” and “*death or serious injury*” factors from the PES to PTSD symptoms at follow-up. Again, this approach was necessary as the number of subjects who completed relevant scales did not allow all seven hassles scores and all seven PES factors, or even all seven hassles scores and two PES factors, to be used as dependent variables.

As Table 3-24 shows, after entry of all predictor variables, higher levels of PTSD symptoms were associated with greater “*post-deployment hassles*” severity at follow-up and higher scores on the “*death or serious injury*” factor of the PES. When “*post-deployment hassles*” severity was controlled, score on the “*witnessing unpleasant events*” factor of the PES failed to predict PTSD symptoms at follow-up. “*Pre- and mid-deployment hassles*” severity was unable to predict PTSD symptoms at either step of the analysis.

Table 3-24: Results from hierarchical multiple regression analysis with hassles factors and PES factors “*witnessing unpleasant events*” and “*death or serious injury*” as independent variables and PTSD symptoms at follow-up as dependent variable.

Predictor Variable	Standardised Beta (β)	
	Step 1	Step 2
“ <i>Pre- and mid-deployment hassles</i> ”	.157	.043
“ <i>Post-deployment hassles</i> ”	.669***	.431**
PES factor “ <i>witnessing unpleasant events</i> ”		.167
PES factor “ <i>death or serious injury</i> ”		.505**
R	.696	.795
R Square	.484	.631
Adj R Square	.455	.587
F	16.425***	14.131***

* p<.05 **p<.01 ***p<.001

3.6.3 Predicting Depression

A direct multiple regression analysis was conducted, with the two hassles factors, “*pre- and mid- deployment hassles*” and “*post-deployment hassles*” being entered in Step 1, and depression at follow-up as the dependent variable. As for PTSD symptoms, “*post-deployment hassles*” is able to predict depression at follow-up, whereas “*pre- and mid-deployment hassles*” is not [$F(2,39) = 6.138, p < .01; \beta = .489, p < .01$]. Previous analysis (see Table 3-22) had shown that none of the PES factors were able to predict depression, so these were not included in this analysis.

CHAPTER FOUR

DISCUSSION

4.1 Background

The aims of this study were to examine the psychological effects of peacekeeping service in Bosnia over time, to gain an understanding of the possible predictors of these, including the specific stressors involved in peacekeeping service, and to develop a “Peacekeeping Exposure Scale”. More specifically, to establish whether there were any changes in mental health as a result of a peacekeeping deployment to Bosnia; to examine possible predictors where changes did occur; to assess the incidence of Post-Traumatic Stress Disorder (PTSD) amongst the peacekeepers; to make comparisons with other groups; to gain an understanding of the specific stressors of the peacekeeping experience and to develop a measure of the potentially traumatic stress involved in peacekeeping service.

This study is perhaps the first study to utilise a controlled, longitudinal design to examine the psychological effects of peacekeeping service. As such, it marks an important step in an area of mixed research results.

The mental health status and the nature of the stressors experienced by not only the experimental group of NZ Army soldiers who deployed to Bosnia, but also by members of three control groups, were investigated over the course of a peacekeeping deployment. The control groups were comprised of NZDF personnel who deployed overseas on other than peacekeeping duties at the same time as the deployment to Bosnia, NZ Army personnel who remained on duty in New Zealand over the course of the deployment to Bosnia (matched with the soldiers who deployed to Bosnia) and a group of civilians.

Questionnaires containing a number of mental health scales were administered to the soldiers who deployed to Bosnia at the pre-deployment (prior to deployment), mid-deployment (half-way through the deployment), post-deployment (immediately after the deployment) and follow-up (six months after return to New Zealand) stages. The same scales were also included in the questionnaires administered to members of the three control groups at the pre-deployment, post-deployment and follow-up stages. The post-deployment questionnaire for those soldiers who deployed also included the “Peacekeeping Exposure Scale”, a scale that had been developed to measure the potentially traumatic stress involved in peacekeeping service.

The scales included in the questionnaires allowed the changes in stress and mental health over the course of the deployment for the soldiers who deployed to Bosnia to be analysed and compared with any changes within the control groups. This meant that it was not only possible to get a picture of any changes for the soldiers who deployed to Bosnia but it also meant that it was possible to determine if these changes were unique to being deployed on a peacekeeping mission.

A number of significant results emerged from the current study, and the robust nature of the design allowed some firm conclusions to be made about the mental health of the soldiers who deployed to Bosnia. However, as with much longitudinal research, response rate decreased over the stages of the study and unfortunately this limited some of the analyses.

4.2 Hypotheses

Hypothesis 1: That there will be a significant increase in levels of adverse mental health for those personnel who deploy to Bosnia but no change for those personnel who do not deploy to Bosnia (i.e. the Control Groups)

The first hypothesis was that there will be an increase in levels of adverse mental health as a result of the peacekeeping deployment. More specifically (i.e. Hypotheses

1a to 1f), that there will be a significant increase on a number of mental health outcome measures (and significant decrease for psychological well-being) for those personnel who deploy to Bosnia but no change for those personnel who do not deploy to Bosnia. That is, NZDF personnel who deployed overseas on other than peacekeeping duties, NZ Army personnel who remained on duty in New Zealand and a group of civilians.

Although the mean levels of all of the mental health outcome measures changed across the stages of the study (or throughout the deployment) for those personnel who deployed to Bosnia, analyses revealed that the changes in psychological well-being, psychological distress, total distress and state anxiety were not significant. However, levels of Post-Traumatic Stress Disorder (PTSD) symptoms and depression differed significantly over the stages of the study at which they were measured.

Analyses revealed no change across the stages of the study on any of the mental health outcome measures (i.e. psychological well-being, psychological distress, total distress, PTSD, state anxiety and depression) for any of the three control groups.

The change in levels of PTSD symptoms and depression over the deployment for those who deployed to Bosnia but not for any of the three control groups meant that Hypotheses 1d and 1f could be supported.

Hypothesis 2: That there will be increased levels of PTSD symptoms and incidence of PTSD amongst the personnel who deploy to Bosnia than within any of the control groups

The results suggest that none of the personnel who deployed to Bosnia could be classified as “PTSD cases” before they deployed overseas. However, three (3.1 percent and 4.5 percent) could be identified as “PTSD cases” at the post-deployment and follow-up stages respectively, using a cut-off of 94 on the Mississippi Scale for PTSD (M-PTSD). Using a cut-off of 102, this changes to one (1 percent) of the soldiers who deployed to Bosnia being classified as a “PTSD case” at post-

deployment and three (4.5 percent) at follow-up. (In order to allow comparisons to be made with previous research, two different cut-offs (94 and 102) to establish PTSD “cases” were used on the M-PTSD, and equivalent cut-offs were determined for the civilian version of this scale.)

On the other hand, only one of the control group respondents could be classified as a “PTSD case” at any stage of the study (a member of the civilian control group at follow-up).

The low number of “PTSD cases” meant that a reliable statistical analysis of this observed difference could not be conducted. Thus Hypothesis 2, that there will be increased levels of PTSD symptoms and incidence of PTSD amongst the personnel who deployed to Bosnia than within any of the control groups, cannot be supported. However, it appears as if deployment to Bosnia resulted in more “PTSD cases” over the course of the study than deploying overseas on other than peacekeeping missions, being a member of the NZ Army but remaining in New Zealand, or being in civilian employment in New Zealand. These results are also consistent with the significant change in level of PTSD symptoms over the stages of the study for the soldiers who deployed to Bosnia but not for the three control groups.

Hypothesis 3: That those mental health outcome measures that change significantly across the course of the study will be predicted by daily hassles, deployment hassles and peacekeeping exposure

The third hypothesis was that the measures of the stress involved in the peacekeeping deployment would be able to predict those mental health outcome measures that changed significantly across the course of the deployment. That is, that daily hassles, deployment hassles and peacekeeping exposure would be able to predict PTSD symptoms and depression.

It seems that most of the “stress” measures from the different stages of the study were correlated with PTSD symptoms, although only several were able to predict it. These

were all of the “*post-deployment*” stress measures (post-deployment daily hassles and deployment hassles and follow-up daily hassles), and two of the factors from the Peacekeeping Exposure Scale (PES), “*witnessing unpleasant events*” and “*death or serious injury*”. Thus, hypotheses 3a, 3b and 3c could be supported for PTSD, although 3a and 3b for daily and deployment hassles measured after the deployment only.

Hypotheses 3a and 3b were also able to be supported for depression as the “*post-deployment*” stress measures (post-deployment daily hassles and deployment hassles and follow-up daily hassles) were able to predict depression at follow-up. As for PTSD symptoms, these hypotheses could be supported for daily and deployment hassles measured after the deployment only.

4.3 Mental Health Across Deployment Stages

Although the mean level of all the mental health outcome measures changed throughout the deployment for those soldiers who deployed to Bosnia, only PTSD symptoms and depression differed significantly. The significance of these results is increased by the fact that analyses revealed no change across the stages of the study for any of the control groups, on these or any of the other mental health outcome measures.

With respect to PTSD, it seems that post-deployment and follow-up levels for those respondents who deployed to Bosnia were significantly higher than pre-deployment levels. That such a change was not found within any of the three control groups further endorses its significance. That is, deploying to Bosnia is related to increased levels of PTSD symptoms, which cannot be said of deploying overseas on other than peacekeeping duties or remaining in New Zealand as either a soldier or a civilian. The incidence of PTSD in the current study also endorses the significance of the rise in PTSD symptoms over the course of the deployment. That is, although only 4.5 percent of the soldiers who deployed to Bosnia could be classified as “PTSD cases” at

the follow-up stage, none of them could be classified as a “PTSD case” before they deployed.

The other mental health outcome variable which changed significantly is level of depression. This increased significantly from post-deployment to follow-up, the two stages at which the depression scale was included. Furthermore, analyses revealed a significant interaction between respondent group and stage of the study. This means that a particular combination of respondent group and stage of study was associated with a significantly different level of depression. In this case, it seems that this is because mean level of depression for those soldiers who deployed to Bosnia was lower at post-deployment, but higher at follow-up, than for those soldiers who did not leave New Zealand during the course of the study.

Further significant results from the analyses of change in mental health across the stages of the study and between the different respondent groups, were a significant difference in mean level of psychological distress, as measured by the MHI, over the deployment stages for the sample as a whole, although not within any of the respondent groups, and a significant interaction between deployment stage and group on mean level of total distress, as measured by the HSCL-21. The latter seems to have been as a result of mean level of total distress being lower for the soldiers who deployed to Bosnia than for the other two military groups at pre- and post-deployment, but higher at follow-up.

Other interesting findings are that the pattern of change within a number of the mental health outcome variables is the same for the two groups that deployed overseas (i.e. the personnel who deployed overseas on other than peacekeeping duties and those who deployed to Bosnia). Although none of these changes were significant for the personnel who deployed overseas on other than peacekeeping duties, this similarity of pattern of change suggests that many of the emotions and feelings surrounding a deployment, irrespective of the mission, are similar. However, as hypothesised, there is obviously something about a peacekeeping deployment, over and above other overseas deployments, that causes significant changes in mental health.

Another pattern worthy of note is that the group of NZ Army personnel who remained in New Zealand over the course of the study was slightly “worse off” than the other two military groups on some of the mental health variables in terms of mental health. This may suggest that deployments are seen as positive experiences in which soldiers generally want to participate. They are probably also viewed as providing the opportunity to do work that is meaningful and which puts their training to good use. Kodama et al (2000) found a similar result in that Japanese personnel who did not deploy to the Golan Heights had higher levels of anxiety and general psychological distress than those who did deploy.

A further interesting finding is that the civilian group was generally “worse off” than the military groups in terms of mental health. However, this needs to be interpreted carefully, as the civilian group differed from the military ones in a number of ways. Despite an attempt to “match” the personnel who deployed to Bosnia, the civilian group was older, had a higher mean level of income and the sample contained a number of “managers”. These differences may have been associated with the higher level of daily stress experienced by this group and this in turn may have influenced mental health. It is also possible that the difference may not be due to these factors, rather, it may suggest that there is something about the military environment that is protective of mental health. For example, a well-defined structure and support network, including medical and pastoral care and comradeship.

Overall, the results certainly suggest that there were some increases in adverse mental health as a result of deploying to Bosnia. Namely, incidence of PTSD, PTSD symptoms and depression, and to some extent, total distress.

It is difficult to compare these results with those from previous research, as little of this has been longitudinal. That is, while some authors have measured levels of adverse mental health subsequent to a deployment, few employed any measures prior to deployment. This means that it is difficult to determine if similar changes occurred.

The piece of longitudinal research with which the results from the current study can be most easily compared is that reported by MacDonald et al (1999, 1998 & 1996).

They found higher levels of anxiety and psychological distress, and lower levels of positive psychological well-being in NZDF personnel six months after they had returned from a variety of peacekeeping missions. It therefore seems as if both the current research and MacDonald et al's (1999, 1998 & 1996) research found higher levels of distress six months after soldiers returned from a peacekeeping mission. However, they did not find similar increases in depression as the current study, while the current study did not find the same increase in anxiety and decrease in psychological well-being as MacDonald et al (1999, 1998 & 1996). PTSD was not measured throughout MacDonald et al's research so it was not possible to determine whether or not there was any increase in PTSD symptoms.

Longitudinal research conducted by Deahl et al (2000) to investigate the effectiveness of psychological debriefing also allows meaningful comparison with the current study. They found very low rates of PTSD and more general psychopathology at three different data collection points after soldiers returned from Bosnia. However, once again these were not measured prior to the deployment.

Castro & Adler (1999) and Adler et al (2000; cited in Weerts et al, 2002) investigated the mental health of US soldiers at two stages of peacekeeping missions to Bosnia and Kosovo respectively. They found lower levels of depression and physical symptoms at post-deployment than during the deployment itself. This is also the case with all the measures in the current study, with the exception of PTSD, which was significantly higher at post-deployment than pre-deployment. (The situation with respect to depression is unclear as this was not measured prior to the deployment in the current study due to delays with permission to use the scale.) However, unlike the current study, Castro & Adler (1999) and Adler et al (2000; cited in Weerts et al, 2002) did not include a follow-up stage, so levels of mental health six months after the deployment are not known.

Further comparisons of the post-deployment and follow-up stages can be made with results of longitudinal research reported by de Vries et al (2001 & 2002). They found a decrease in the percentage of Dutch peacekeepers on a fatigue severity measure from just after a deployment to Cambodia to a follow-up eighteen months later.

However, a large proportion (60 percent) of their sample reported no improvement in levels of fatigue and related symptoms.

Looking a little more broadly at the literature allows comparison with recent research on soldiers who have served in war, rather than peacekeeping duties. Research on American soldiers who served in the Gulf War produced very similar findings to the current research. That is, that PTSD rate and symptoms increased from immediately after deployment to a follow-up stage (in this case, two years later) (Wolfe et al, 1999).

4.4 Incidence of PTSD, Depression and other Psychopathology

4.4.1 PTSD

With respect to the incidence of PTSD, as stated previously, none of the soldiers who deployed to Bosnia could be classified as “PTSD cases” before they deployed. However, 3.1 percent or 1 percent (dependent on the cut-off) could be classified as a PTSD case at the post-deployment stage, and 4.5 percent at the follow-up stage. That is, six months after the deployment.

While the low numbers of cases meant that a reliable analysis of this difference could not be conducted, a change obviously occurred. Only one member of the three control groups (the civilian control group) was able to be classified as a PTSD case during the course of the study. Furthermore, as discussed earlier, the change in level of PTSD symptoms over the deployment was significant for the soldiers who deployed to Bosnia but not for any of the control groups. It seems, therefore, as if deployment to Bosnia resulted in PTSD cases, albeit a low rate.

Once again, it is difficult to compare these results with those from previous research as few of these utilised control groups and none of these studies measured PTSD before subjects deployed. It is therefore not possible to know what changes, if any, occurred. For example, it may be that subjects from previous research could be

classified as “PTSD cases” **before** they deployed. Certainly, Bolton et al (2001) highlight the need to screen for potentially traumatic events when attempting to isolate the rates of PTSD following a specific traumatic event, as they found 6 percent of soldiers with PTSD before they deployed on a peacekeeping mission to Bosnia. The inclusion of pre-deployment measures is perhaps becoming even more critical, as soldiers commonly deploy on more than one peacekeeping mission during their military careers. It is possible that they could deploy on a second or third mission with unresolved issues from previous ones.

The most relevant research with which to compare these results is again that reported by MacDonald et al (1999, 1998 & 1996). However, while this research was longitudinal and included measures on a variety of health and mental health scales throughout the stages of peacekeeping deployments to a number of mission areas, PTSD was not measured until after the deployment. Despite not being able to make any conclusions about whether there was an increase in PTSD, the comparison with Macdonald et al’s research is still worthwhile as PTSD was also measured by the Mississippi Scale for Post-Traumatic Stress Disorder. Furthermore, both studies investigated New Zealand soldiers at similar deployment stages.

The incidence rate of PTSD for the soldiers who deployed to Bosnia in the current study is slightly higher than that found by MacDonald et al (1999, 1998 & 1996). MacDonald et al (1999, 1998 & 1996) classified only 1 percent of their sample as “PTSD cases” six months after they had returned from deployment, compared with the 4.5 percent found using the same cut-off on the same scale at the same time-frame in the current study. Even though these incidence rates are low, it is still interesting to note this difference, particularly as the robust design in the current study shows that there was a definite increase in “PTSD cases” from the pre-deployment period.

It is difficult to suggest what might have caused the higher rate in the current study as the environment and nature of the deployment compared with those in MacDonald et al’s (1999, 1998 & 1996) research would perhaps suggest the opposite. The soldiers who deployed to Bosnia in the current study deployed to a quieter area, as part of a larger contingent and with much more support (e.g. there was a medical team and chaplain to provide support, along with a definite command structure) than most of

the subjects involved in the MacDonald et al (1999, 1998 & 1996) study. It was felt that this would have helped to reduce, rather than increase, any possible psychological effects of the peacekeeping experience.

The low (albeit conclusive) incidence of PTSD following peacekeeping service in the current study is also supported by other previous research. Johnston (2001) reports a low rate (1.2 percent) of PTSD for Australian peacekeepers who deployed on various missions, Ponteva (2000; cited in Weerts et al, 2002) found a 2.7 percent incidence rate for Finnish peacekeepers who were repatriated from a deployment and 1.3 percent for those who were not. Schuffel et al (1998; cited in Weerts et al, 2002) found a 2 percent prevalence rate for German peacekeepers who served in Cambodia. Deahl et al (2000) report a very low level of PTSD for British soldiers who served on peacekeeping duties in Bosnia. However, they were surprised by this result as incidence rates for British soldiers one year after service in the Gulf War and five years after the Falklands war were 50 percent (Deahl et al, 1994; cited in Deahl et al, 2000) and 20 percent (O'Brien & Hughes, 1991; cited in Deahl et al, 2000) respectively.

On the other hand, other authors have found elevated levels of PTSD following peacekeeping service. Ward (1997 & 1995) reported that 20 percent of Australian peacekeepers who served in Somalia reported PTSD symptoms 15 months after their return. Possey (cited by Corelli, 1994; and Birenbaum, 1994) reported a similar finding for Canadian veterans of the former Yugoslavia, reporting that 20 percent suffered from either PTSD or clinical depression, while Litz et al (1997b) reported a slightly lower rate (8 percent) of PTSD for United States veterans of Somalia, approximately five months after their return. This is a similar rate to the 7.3 percent cited for Polish peacekeepers who served in Bosnia (Chilczuk, 1998: cited in Weerts et al, 2002). Knoester (1989, cited in Weerts et al, 2002) estimated the prevalence of PTSD among Dutch peacekeepers as 5 to 10 percent and Weerts et al (2002) reports PTSD rates for Dutch peacekeepers ranging from 8 percent for a mission to Srebrenica in 1995, through 4.3, 2.6 and 2.0 percent for Dutch peacekeepers on a mixture of missions over time from 1991 to 1999.

The results from previous research make it difficult to establish whether peacekeeping service causes those soldiers who undertake such duties to develop PTSD. However, unlike the current study, it could be argued that less confidence can be placed on previous research results as none of this research compared PTSD rates following deployment with pre-deployment levels. The current study shows that peacekeeping service can cause PTSD, albeit in a small percentage of people, in addition to an increased level of PTSD symptoms.

It is interesting to note that those studies that have found higher rates of PTSD after a peacekeeping deployment have measured PTSD at greater intervals after deployment than the current study. For example, Ward (1997 & 1995) reported that 20 percent of Australian peacekeepers who served in Somalia reported PTSD symptoms 15 months after their return. The PTSD caseness statistics cited by Deahl et al (2000) are 50 percent and 20 percent respectively for British troops one year after service in the Gulf War and five years after service in the Falklands War. Furthermore, both the current study and Castro & Adler (1999) and Adler et al (2000; cited in Weerts et al, 2002) found lower levels on many mental health outcome measures immediately after a peacekeeping deployment than during the deployment itself.

There may be a “honeymoon” period after a deployment, where everything seems positive because the deployment is over, and in many cases, soldiers have arrived home. It may well then be that they find being at home more stressful than being on deployment (and level of daily hassles suggests this is indeed the case), that the change in role is disheartening, that other issues or events occurred after return and that these had more of an impact on mental health than the deployment itself, or it could be related to organisational issues like management and support. It could also be that, as Wolfe et al (1999) suggest is possible, that initial PTSD cases went unnoticed. This could certainly be the case in the current study if the higher of the two cut-offs was used. Whatever the reason, this observation is well worth bearing in mind for future research. That is, the final measurement of mental health after a peacekeeping deployment should be made well after it is over.

4.4.2 Depression

The other mental health outcome measure to increase significantly for the soldiers who deployed to Bosnia but not for any of the control groups was depression. This increase occurred between post-deployment and follow-up, the two stages at which it was measured. In this case, more direct comparisons can be made with research reported by MacDonald et al (1999, 1998 & 1996), as depression was measured at more than one stage of their study. They found it increased from pre-deployment to deployment, decreased to its lowest level immediately after the deployment then increased at follow-up, six months later. Thus, there was an increase in depression from post-deployment to follow-up in both this and the current study.

Other authors have also found higher rates of depression after peacekeeping deployments. For example, Possey, cited in Corelli (1994) and Birenbaum (1994) found that 20 percent of Canadian personnel returning from the Balkans suffered from either PTSD or clinical depression. Orsillo et al (1998) found that over one-third of American soldiers met criteria for psychiatric caseness, including depression, approximately five months after returning from Somalia. They suggest that depression might be particularly common among peacekeepers because of the disillusionment and demoralisation that can be associated with the role. This could perhaps be related to issues such as feeling personal efforts have not made much difference to the wider situation and disappointment that local people seem hostile despite efforts to help them. Depression has also been found to be a problem for Dutch peacekeepers who served in Lebanon (van der Beek et al (1989; cited in Weerts et al, 2002). Once again, results are mixed. For example, Han & Kim (2001) found no sign of depressive problems in a group of peacekeepers of various nationalities who had served in the Western Sahara.

4.4.3 Other Psychopathology

The change in mean total distress score across the stages of the study for the EG was not significant. However, it is also worth looking at previous literature on more general psychopathology, as there was a significant interaction between respondent

group and stage of study on mean total distress score. This is lower for the EG than for CG1 and CG2 at pre-deployment and post-deployment, but higher at follow-up.

Once again, results from previous research are mixed. A number of authors have found high levels of more general psychopathology. For example, de Vries et al (2000) found 17 percent of Dutch Cambodia veterans met a case definition on a fatigue severity measure, and while this decreased to 6 percent after eighteen months, 61 percent did not report improvement (de Vries et al, 2001). Orsillo et al (1998) found that over one-third of a sample of American soldiers who served in Somalia met criteria for psychiatric caseness, while Wauters (1997; cited in Weerts et al, 2002) found 15 to 20 percent of Belgian peacekeepers experienced serious psychological problems and had difficulty adapting after their return. Ward (1997 & 1995) found that Australian personnel who served in Somalia had significantly higher levels of self-reported psychopathology than controls, 15 months after their return to Australia, while Johnston (2001) reported a high caseness on the GHQ 12 for Australian personnel, suggestive of elevated levels of general psychopathology.

Conversely, a number of other authors have found lower levels of more general psychopathology following peacekeeping service (e.g. Han & Kim, 2001; Deahl et al, 2000; Schuffel et al, cited in Weerts et al, 2002; Halverson et al, 1995; Harris, 1994; Ritchie et al, 1994; Cartwright, 1994; Lundin & Otto, 1992 & 1989; and Weisaeth & Sund, 1982).

Various authors have also found increased levels of alcohol consumption during or following peacekeeping service (e.g. Johnston, 2001; Deahl et al, 2000; Britt, 1999; Mehlum, 1999; Applewhite, 1994; HQ Defence Command, 1993; Lundin & Otto, 1992, 1989; Carlstrom et al, 1990; and Weisaeth & Sund, 1982) and it is thought that this may mask psychopathology (Deahl et al, 2001 & 2000). Certainly higher levels of alcohol consumption could be regarded as more acceptable to soldiers than admitting underlying psychological problems. In many cases it seems that alcohol consumption returns to "normal" levels following a deployment (e.g. Mehlum, 1999) and in others it seems that it can increase. For example, Deahl et al (2001 & 2000) found elevated scores on a measure of problem drinking immediately after a peacekeeping deployment to Bosnia. A randomised group of soldiers received a

psychological debriefing and while there was a significant reduction in problem drinking for these soldiers 12 months after return, there was an increase for the non-debriefed group.

The increase in alcohol consumption and the high levels of more general psychopathology following a peacekeeping deployment found by some authors suggests that the picture of mental health following peacekeeping service is complicated and highlights the need for multiple outcome measures.

Results from the current study and much of the previous research certainly suggest that the mental health of those personnel who deploy on peacekeeping missions can be adversely effected by such service. Not only PTSD but also depression and more general psychopathology seem to be the areas of commonality between the research.

4.5 Predicting PTSD and Depression

Another aim of the study was to examine possible predictors of any mental health outcome measures that are shown to change as a result of the deployment. These were PTSD symptoms and depression. A series of separate regression analyses were performed in order to do this. Unfortunately, the current research, like most longitudinal research, suffered from a decrease in response rate over the stages of the study so it was not possible to enter large numbers of variables in one analysis. Consequently, different functional groups of independent variables were used for each analysis. These were demographic variables, military variables and questions asked of respondents at each stage of the study.

Education was the only one of the demographic variables entered that was able to predict PTSD symptoms at follow-up, with lower levels of education being associated with higher levels of PTSD symptoms. Corps was the only military variable able to predict PTSD. It seems that higher mean levels of PTSD symptoms were associated with RNZAC, RNZA and RNZIR (i.e. armoured, artillery and infantry). These are the

“teeth” arms, or corps generally associated with more combat-oriented, and dangerous roles.

Separate analyses were also conducted with groups of questions asked at each of the four deployment stages as independent variables. Less confidence in pre-deployment training at the pre-deployment stage, and lower levels of settledness back into life in NZ and satisfaction with family support during the deployment at follow-up, were associated with higher levels of PTSD symptoms at follow-up.

Although much of the literature focuses on predictors of more general psychopathology, several other authors have also attempted to predict PTSD after peacekeeping service. There are some areas of commonality with previous research. For example, Bramsen et al and Dirkzwager et al (1997 and unpublished; cited in Weerts et al, 2002) also found that lower educational level was a risk factor for PTSD following peacekeeping service.

It seems therefore that education is a common predictor of PTSD following peacekeeping service. This result may help to explain the difference between the rate of PTSD found in the current study and that found by MacDonald et al (1999, 1998 & 1996). It was thought that deploying as part of a contingent with all the support inherent in this, as in the current study, would be protective of mental health. However, there was a higher rate of PTSD than in MacDonald et al's (1999, 1998 & 1996) research, where many subjects deployed in an “observer” role. Although there was generally less support for these peacekeepers, a larger proportion were officers with higher levels of education. Level of education may therefore have been more important in the development of PTSD than organisational factors. Certainly Sharkansky et al (2000), in their research on Gulf War veterans, suggest that people with higher resources may have more effective coping resources which in turn alleviate the effects of stress.

With respect to depression, as for PTSD, education was the only demographic variable entered that was able to predict depression at follow-up. It seems that higher levels of education are associated with lower levels of depression.

Corps was the only one of the military variables entered that was able to predict depression at follow-up. It seems that higher mean levels of depression were associated with RNZAC, RNZ Sigs, RNZA and RNZIR (i.e. armoured, signals, artillery and infantry). As for PTSD symptoms, all of the “teeth” arms, or corps generally associated with more combat-oriented, and dangerous roles, were represented.

Separate analyses were also conducted with groups of questions asked at each of the four deployment stages as independent variables. It seems that dissatisfaction with the amount of notice, the greater the amount of stress or difficulty experienced during the deployment, and feeling less settled back into life in NZ at follow-up were associated with higher levels of depression at follow-up.

Few authors have attempted to predict depression after peacekeeping service. However, similar results have been found by Bartone & Adler (1998), who also found that exposure to deployment stressors was strongly related to depression. Incidentally, the number and nature of stressful experiences during the deployment (Bramsen et al, 2000 and Bramsen et al and Dirkzwager et al, 1997 and unpublished; cited in Weerts et al, 2002) and the appraisal of these stressors, the deployment and negative aspects of it (Litz et al 1997a, 1997b; Bramsen et al and Dirkzwager et al, 1997 and unpublished; cited in Weerts et al, 2002) have also been found to predict PTSD following peacekeeping service.

The results from the current study and previous research suggest that education and the extent to which soldiers feel settled back into life in NZ after their return are important predictors of PTSD and depression following a peacekeeping deployment. It is perhaps not surprising that soldiers with PTSD and depression symptoms are less likely to feel settled into life in NZ. Likewise, feeling less settled may intensify PTSD and depression symptoms.

4.6 Stressors of the Peacekeeping Experience

The second aim of the study was to gain an understanding of the specific stressors involved in peacekeeping service. More specifically, to examine both potentially traumatic and more chronic, everyday stressors, to develop a "Peacekeeping Exposure Scale" to measure the potentially traumatic stress involved in peacekeeping, and to examine the relationship between the stressors of peacekeeping service and any changes in mental health that were found to occur as a result of the deployment.

The Hassles Scale, a measure of chronic, everyday stress, was included in questionnaires administered to all subjects at all stages of the study. A Deployment Hassles scale, a modification of the Hassles Scale that measured chronic, everyday stress specifically relating to the deployment, was included in questionnaires administered to the soldiers who deployed to Bosnia and to members of the control group who deployed overseas on other than peacekeeping duties. This was in order to quantify, and gain more information about, the more chronic or everyday stressors of the deployment *per se*.

While total levels of stress (daily hassles) and deployment stress (deployment hassles) did not change significantly throughout the deployment, some interesting patterns emerged. Levels of stress for the soldiers who deployed to Bosnia were relatively high at pre-deployment, lower at mid-deployment, lowest at post-deployment and highest at follow-up. On the other hand, levels of deployment stress, or that stress relating specifically to issues to do with the deployment, were highest at pre-deployment and much lower at mid and post-deployment.

Elevated levels of daily stress at pre-deployment and follow-up were also found in previous longitudinal research on NZDF personnel who deployed on peacekeeping duties (MacDonald et al, 1999, 1998 & 1996). MacDonald et al (1999, 1998 & 1996) also found a similar pattern of deployment stress as the current study. Again, the changes throughout deployment were not significant, but pre-deployment levels of deployment hassles were the highest for both studies.

There was some concern that completion of the post-deployment questionnaire immediately after psychological debriefs in Bosnia may have meant that it was something of a “honeymoon” period with anticipation of homecoming being foremost in people’s minds. However, results were consistent with MacDonald et al’s (1999, 1998 & 1996) post-deployment results and those questionnaires were administered six weeks after return. It is therefore unlikely that the different timing affected the results.

While the changes in daily stress and deployment stress were not significant in either this research or previous research, the inclusion of the control groups in the current study allows a little more insight into the stress associated with a peacekeeping deployment than would otherwise be the case. A similar pattern was observed for those personnel who deployed overseas on other than peacekeeping duties, while levels of stress were more uniform across the stages of the study for the NZ Army personnel who did not deploy overseas. This suggests that changes in levels of stress throughout a deployment may be related to being on any kind of deployment, rather than just a peacekeeping one. Levels of stress for the civilian control group were higher than for the military groups, with the exception of the follow-up stage where there was no difference between groups.

Other research, although not longitudinal, also suggests different levels of stress at different stages of a peacekeeping deployment. For example, there was a significantly higher incidence of psychiatric casualties within three months of arrival in The Congo (Singh et al, 2001) and a higher rate of major axis I disorders and three suicides during the first few weeks of a deployment to Haiti (Hall, 1996).

Results from the current study and previous research therefore seem to suggest that the pre-deployment, early deployment and follow-up periods are the most stressful times of a deployment. It is not surprising that the pre-deployment stage has a high level of daily and deployment stress as not only is there a lot to do in a limited amount of time, but there is also an element of fear of the unknown.

Once servicepersonnel have deployed and have adapted to their new environment, it seems that they find the situation far less stressful than they anticipated. This may be

because they have the opportunity to actively deal with those things that they thought might be stressful and because the uncertainties they may have harboured prior to deploying have been resolved. It also may be related to the chance to do their job and the meaningful nature of their work.

It seems that the post-deployment period was also characterised by low levels of daily and deployment stress. This could have been because the deployment had just finished, and soldiers were feeling good that they were soon to be going home.

The lower level of stress during and immediately after the deployment may serve to highlight the difficulties of the follow-up stage. Going home is what most soldiers look forward to, yet the period six months after they return is associated with the highest level of stress.

It may be that soldiers were very positive about returning home, as results from the post-deployment stage suggest, but that their expectations were not met. It may also be that life is more demanding at home and more simple on deployment and the need to balance work with other responsibilities that were not part of everyday lives while in Bosnia may also contribute towards the difficulties of this stage. Certainly the result that there was no difference in stress between any of the groups at this stage suggests that this could be the case.

In addition, soldiers generally have to cope with much change when they return to NZ. For example, changes in role, status, perceived meaning of work, living arrangements, social situation and responsibility, in addition to unexpected changes that have occurred at home. As Downie (2002) states, "almost all aspects of life at home change during deployment" (p 12). Certainly a number of authors have identified role transitions and changes in life status as contributing towards ill-health (e.g. Weissman, Markowitz & Klerman, 2000; Holmes, 1976 and Holmes & Rahe, 1967).

In addition to quantifying levels of stress, the hassles and deployment hassles scales are also able to assist in pinpointing those things that make each deployment stage stressful, and some more stressful than others. It seems that a number of stressors

were consistently reported as frequent and/or severe at all deployment stages, albeit in differing orders of priority. These were relationships with other contingent members (including superiors) and issues to do with work itself.

Other stressors were associated with specific stages of the deployment. For example, sex and intimacy were by far the most frequent and severe stressors of the mid-deployment stage and were also reported as frequent and severe in the pre-deployment and post-deployment stages.

Deployment stressors, or those stressors more specific to the deployment itself, showed a similar pattern, with several being cited as frequent and/or severe at all three stages at which they were measured (pre-deployment, mid-deployment and post-deployment). These were restrictions, rumours, boredom, lack of control over events and separation. Information of relevance to each deployment stage (e.g. date of return to NZ and posting on return to NZ for the post-deployment stage) were also reported as frequent and/or severe stressors.

Bartone & Adler (1998) also found a number of persistent stressors throughout a peacekeeping deployment. These were family separation, uncertainty, boredom (in particular insufficient meaningful work and activity) and inability to change things (or powerlessness). These are very similar to the daily stressors and deployment stressors that persisted over the stages of the current study – separation, rumours and lack of information, boredom, work-related issues and lack of control over events. Relationships with others and restrictions are the only stressors that were persistent across the stages of the current study but were not to the fore in Bartone & Adler's (1998) study.

It is interesting to note that while family-related concerns were not to the fore in the current study, not only Bartone & Adler (1998), but MacDonald et al (1999, 1998 & 1996) found them consistent stressors throughout their research. They have also been identified as stressors in other previous research (e.g. Cartwright, 1994; Hamilton-Smith, 1994; Harris, 1994; Applewhite, 1994 and Lundin & Otto, 1989). This suggests that the NZDF provided very good support to families during the deployment to Bosnia.

Examination of the stressors reported as frequent and/or severe for each deployment stage by those who deployed to Bosnia compared with those reported by the control groups, in particular those who deployed overseas on other than peacekeeping duties, provides further valuable information. Any differences between these two groups could pinpoint stressors that are unique to deploying on a peacekeeping mission. It also allows insight into the practical measures that could be taken to support soldiers who deploy on peacekeeping missions.

With respect to stressors that were specific to deployment stage, sex and intimacy were pre-deployment stressors for those who deployed to Bosnia but not for members of any of the control groups. Those who deployed overseas on other than peacekeeping missions also found relationships with work-mates and other work-related issues stressful but other than this did not share the same pre-deployment stressors as those who deployed to Bosnia. It seems that while the pre-deployment period can bring difficulties with work, including work mates, to the fore no matter whether deploying on a peacekeeping mission or some other type of duty, soldiers definitely have specific issues and concerns on their mind when they are about to deploy on a peacekeeping mission. MacDonald et al (1999, 1998 & 1996) also found that work related stressors were to the fore at the pre-deployment stage, while Bartone & Adler (1998) found almost exactly the same pre-deployment stressors as the current study, with the exception of sex and intimacy.

Aside from separation and pre-deployment information, which were deployment hassles for those soldiers who deployed to Bosnia and for those who deployed on other than peacekeeping missions, most deployment hassles at the pre-deployment stage were unique to those who deployed to Bosnia. These were rumours, restrictions/lack of freedom, boredom, lack of control over events, command relationship, supplies/personal equipment.

Sex and intimacy were by far the most frequent and severe daily hassles of the mid-deployment stage. Other frequent hassles included relationships with others, especially fellow contingent members and issues that concerned the work itself (e.g. nature of work and workload). News events also caused stress.

The specific deployment hassles for the soldiers in Bosnia concerned restrictions/lack of freedom, boredom, separation, mail, information and rumours, command relationship, language difficulties and relationship with locals and separation from family/homesickness.

Previous research highlights common stressors during the deployment itself. For example, work-related stressors (MacDonald et al, 1999, 1998 & 1996 and Bartone & Adler, 1998), language difficulties (MacDonald et al, 1999, 1998 & 1996 and Han & Kim, 2001), communication home (MacDonald et al, 1999, 1998 & 1996 and Bartone & Adler, 1998), boredom (MacDonald et al, 1999, 1998 & 1996), separation (MacDonald et al, 1999, 1998 & 1996 and Han & Kim, 2001), intimate hassles (MacDonald et al, 1999, 1998 & 1996), climate adaptation and physical discomfort (Han & Kim, 2001) and interpersonal problems (Han & Kim, 2001 and Bartone & Adler, 1998).

It is interesting to note that Bartone & Adler (1998) identified a number of additional stressors of the deployment stage, perhaps because they looked at three stages within the deployment itself. These were early-deployment, mid-deployment and late-deployment. Stressors of the early deployment stage tended to relate to adjusting to the new environment, whereas late-deployment stressors seemed to relate to lack of recognition.

Further results of interest regarding deployment stress were found by Britt (1999). Results from pre-deployment and mid-deployment surveys showed that subjects underestimated a number of deployment stressors, such as feelings of isolation and whether or not they felt they would be able to help the local population. This meant that they were perhaps less prepared to cope with them. The opposite may have been the case in the current study, as both daily and deployment stress levels were lower during the deployment than before it.

Sex, intimacy, relationships with work-mates and the environment were post-deployment stressors for those who deployed to Bosnia but not for members of the control groups. Once again the deployment stressors of information about the deployment (this time about the return to NZ), restrictions, leave and rumours were

not an issue for those who deployed overseas on other than peacekeeping missions. It is therefore quite justifiable to say that they can be said to be stressors relating specifically to having been deployed on a peacekeeping mission.

MacDonald et al (1999, 1998 & 1996) also found that information on the return to NZ was a post-deployment stressor.

The most frequently reported and severe daily hassles of the follow-up stage are particularly worthy of note as this was the stage with the highest mean level of daily hassles (or highest stress) for the soldiers who deployed to Bosnia. These were issues relating to work (e.g. the nature of work, workload, amount of free time, your supervisor, employer or superior and fellow workers). These are reported as frequent by similar percentages of control group respondents, but the work-related hassles are reported as severe by considerably more of the soldiers who deployed to Bosnia than any other respondents. Work-related issues seem to have created a large amount of stress for the soldiers who deployed to Bosnia, considerably more, in fact, than for the group who deployed on other than peacekeeping missions. Problems with work on return to NZ, therefore, seems to be a specific issue for personnel who deploy on peacekeeping missions.

The stressful nature of work on return to NZ is further endorsed by MacDonald et al (1999, 1998 & 1996).

4.7 Peacekeeping Exposure Scale

As the chronic or more everyday stressors take account of only some of the stress associated with a peacekeeping deployment, the "Peacekeeping Exposure Scale" (PES) was developed and refined in an attempt to measure the potentially traumatic stressors of the peacekeeping experience.

The first stage of the development process was item generation through interviews with returned peacekeepers, while the second involved a literature review to ensure

important items were included. This resulted in an initial version with 19 items whereby subjects were asked how often they had experienced certain events. This initial version was piloted in previous research, as the third stage of the development process. Finally, the fourth stage involved examination by “experts” (members of an international working group on the Management of Stress in Deployed Operations). This resulted in one item, “How often did you handle bodies or treat casualties?”, being re-written as two items as it was recognised that the two events combined in the original item were, in many cases, quite independent of each other.

A 20-item version of the PES was thus used in the current study. It was included in the post-deployment questionnaire which was administered immediately after the deployment. A principal components factor analysis with varimax rotation resulted in the deletion of two items as factor loadings were lower than 0.5. All remaining analyses were conducted on the resulting 18-item PES.

The construct validity of the scale appears sound, with seven meaningful factors. These are “*safety*”, “*witnessing unpleasant events*”, “*local people*”, “*death or serious injury*”, “*traditional combat*”, “*dangerous incidents experienced by self or colleagues*” and “*personal situation*”. The small number of items loading onto some of the factors was of concern and for this reason, consideration was given to “forcing” fewer factors. However, it was felt that all seven factors were meaningful and that it was better to present an unforced solution in this early work on the PES.

The development process had ensured that face and content validity were sound. It is also pertinent to point out that the PES covers the four conceptual approaches of traditional combat exposure scales discussed by Keane et al (1997), in addition to avoiding the word “atrocities” as Unger et al (1998) advises. Events that could possibly be classified as such are described in a factual manner. This is important as Unger et al (1998) suggest that there are “powerful negative and judgmental connotations” (p. 376) associated with the term. Simply reading an item that includes the word atrocities could cause someone to reinterpret an event or their own part in it. This could not only lead to less valid results but could also possibly be detrimental to the individuals concerned.

Internal consistency for the whole scale was good (0.79), as was split-half reliability (0.74). Internal consistency for the factors varied from good (0.79) to poor (0.45), with lower internal consistency for those factors with only two items. Item-total correlations were also computed as a measure of internal consistency. Mean item-total correlation was 0.473.

Predictive validity was estimated by regressing PES factors onto PTSD at follow-up. It seems that two factors, "*witnessing unpleasant incidents*" (seeing unpleasant things like people suffering from severe illness, starvation or mutilation) and "*death or serious injury*" (witnessing death or serious injury, or being involved in body handling) are able to predict PTSD. This result suggests sound predictive validity as other authors have found similar experiences to be predictive of PTSD. For example, participation in or witnessing of atrocities and exposure to grotesque death have been found to present a significant risk (O'Toole et al, 1999; Beckham et al, 1998; Fontana & Rosenheck, 1994; Yehuda et al, 1992; Green et al, 1990 and Breslau & Davis, 1987) as has handling human remains (Sutker et al, 1994), witnessing locals dying (Fontana et al, 2000) and exposure to casualties, particularly from the soldier's own country (Adler et al, 1996).

Intercorrelations of the PES factors with the daily hassles and deployment hassles measures from all stages of the study were low. This suggests good divergent validity. In other words, the PES measures something different from the more chronic, everyday stressors measured by the daily hassles and deployment hassles scales.

It seems as if the PES has considerable promise as a measure of peacekeeping exposure. It meets all of the criteria listed by Keane et al (1989) as desirable in combat exposure research tool. That is, it is easily administered, easily scored, has sound psychometric properties (good internal consistency and split-half reliability) and has some degree of external validity. However, it needs to be administered to a bigger sample to check the factor solution as the stability of the factors containing only two items is of concern. If the factor solution is stable, it may benefit by the addition of further items to measure the constructs represented by the factors with

only two items. This would hopefully increase the internal consistency of these factors.

At the very least, in its current form, the PES is a useful scale for future research and a valuable screening tool for soldiers returning from peacekeeping deployments to determine who may benefit from further intervention. The PES may also have utility to clinicians, in providing a possible starting point for discussion and information about areas that may be difficult to discuss, and as a treatment planning tool.

Peacekeeping is becoming an increasingly important way of solving conflict, and world events since the data for the current study was collected have corroborated this. For example, the recent situation in Iraq following the 2003 war has required hundreds of peacekeepers. On the other hand, a number of peacekeeping missions have been ongoing for many years. Such missions require large numbers of peacekeepers over extended periods of time and these roles are not limited to the military. Medical personnel, police officers, teachers, scientists, Red Cross workers and members of other Non-Governmental Organisations are just some of the people who could find themselves entering a peacekeeping zone. The PES, with its lack of reference to combat, renders it an appropriate and useful tool for these people as well as military personnel.

4.8 Daily Hassles, Deployment Hassles and Peacekeeping Exposure as Predictors of Mental Health

The third hypothesis was that the measures of the stress involved in the peacekeeping deployment would be able to predict those mental health outcome measures that changed significantly across the course of the deployment. That is, that daily hassles, deployment hassles and peacekeeping exposure would be able to predict PTSD symptoms and depression. It was clear from previous research that exposure to stress, both potentially traumatic events and more chronic everyday stress, is the most common predictor of psychopathology following peacekeeping service (Weerts et al, 2002; Adler et al, in press; cited in Weerts et al, 2002; Deahl et al, 2001; Bramsen et

al, 2000; Fontana et al, 2000; MacDonald et al, 1999; Orsillo et al, 1998; Bartone & Adler, 1998; Litz et al, 1997b; Bramsen et al, 1997; cited in Weerts et al, 2002; Adler et al, 1996; Ward, 1995 & van der Beek et al (1989; cited in Weerts et al, 2002).

Most of the “stress” measures from the different stages of the current study were correlated with PTSD. Ideally, all of these stress measures and all of the PES factors would have been entered together in two multiple regression analyses, in order to determine their relative contribution in the prediction of PTSD symptoms and depression at follow-up. Unfortunately the decrease in response rate at the follow-up stage limited the number of independent variables that could be entered so this could not be done. Instead, it was necessary to conduct a factor analysis on the stress measures to try to reduce the number of variables before proceeding with the multiple regression analyses. A principle components factor analysis had the added advantage of producing orthogonal factors, which was important as the stress severity scores were very highly correlated with each other.

A principle components factor analysis with varimax rotation was therefore conducted on all of the seven daily stress and deployment stress severity scores. Two factors emerged, “*pre- and mid-deployment hassles*”, which consisted of all of the hassles severity scores before and during the deployment (i.e. daily hassles and deployment hassles at pre-deployment and mid-deployment) and the other, “*post-deployment hassles*”, which consisted of all of the hassles severity scores from post-deployment onwards (i.e. daily hassles at post-deployment and follow-up and deployment hassles at post-deployment).

Multiple regression analysis showed that this second factor, “*post-deployment hassles*”, was able to predict PTSD at follow-up. Thus, Hypotheses 3a and 3b could be supported for PTSD, but only for “*post-deployment*” measures. As two of the factors from the Peacekeeping Exposure Scale (PES), “*witnessing unpleasant events*” and “*death or serious injury*” had also been found to predict PTSD at follow-up, Hypothesis 3c could also be supported for PTSD.

This finding that two of the PES factors could predict PTSD supports the idea that the type of stressor experienced can influence PTSD symptoms, as Fontana et al (2000),

O'Toole et al (1999), Beckham et al (1998), Adler et al (1996), Sutker et al (1994), Fontana & Rosenheck (1994), Yehuda et al (1992), Green et al (1990) and Breslau & Davis (1987) have found.

When the "*post-deployment hassles*" factor was controlled, the PES factor "*death or serious injury*" was still able to predict PTSD but the "*witnessing unpleasant events*" factor was not. It seems that current, and post-deployment, levels of chronic, everyday stress and whether or not soldiers encountered death or serious injury, or were involved in body handling during the deployment, are the most powerful predictors of PTSD symptoms six months after a peacekeeping deployment. Furthermore, they both, together, predict PTSD symptoms.

The design of the current study allows firm conclusions to be made regarding the less important role of the chronic everyday stressors at all stages of the study, except for the post-deployment and follow-up stages, in the development of PTSD symptoms. Perhaps the most interesting point is that chronic everyday stressors during the deployment itself do not contribute to PTSD symptoms at follow-up.

The importance of the "*post-deployment*" stressors (i.e. daily hassles at post-deployment and follow-up and deployment hassles at post-deployment) is also indicated by that fact that this was the only measure of stress able to predict depression at follow-up, the other mental health outcome measure that changed significantly across the stages of the study. Thus, Hypotheses 3a and 3b could be supported for depression, but again for "*post-deployment*" measures only.

It seems that level of "*post-deployment*" stress is a powerful predictor of both PTSD and depression six months after a peacekeeping deployment. MacDonald et al (1999, 1998 & 1996), who measured stress at similar time frames over the deployment as the current study, found that the most important predictor of overall mental health status at follow-up was level of current stress, and to a lesser extent, deployment-related stress. This further endorses the finding that six months after the deployment is the most difficult time and suggests that chronic everyday stress experienced during the deployment does not effect mental health after a deployment. However, it must be noted that responses to the question posed at the mid-deployment stage: "How

stressful/difficult are you finding this deployment?” are able to predict depression at follow-up. In other words, perceived levels of stress during the deployment were more important than measured levels of daily and deployment stress in predicting depressive symptoms. It may be that those people who have a tendency to appraise situations in a more negative manner are more likely to experience depressive symptoms and vice versa. Certainly diathesis-stress models of depression endorse a link between personality and life stress (Coyne & Whiffen, 1995).

The finding that responses to the question “How settled do you feel back into life in NZ?” could also predict PTSD and depression further endorses the importance of, and difficulties with, the follow-up period.

It is interesting to note that Sharkansky et al (2000) found that soldiers who served in the Gulf War who reported higher levels of combat exposure also tended to report more life stressors after their homecoming. They argued that this finding lends support for the proposition that trauma leads to more trauma, as do the results from the current study. In both studies, combat (or peacekeeping) exposure was measured immediately after the deployment and current life stressors at follow-up were measured well after this. It was therefore impossible for current life stressors at the follow-up stage to effect the way participants completed the exposure scales.

It also may be argued that soldiers with PTSD are more likely to endorse an exposure scale in a different way from those who do not have PTSD, perhaps due to differing perceptions or appraisal of events. Given that the rise in PTSD symptoms from the pre-deployment stage to the post-deployment stage was significant, and the subsequent rise to follow-up was not, it is possible that those soldiers with higher levels of PTSD symptoms at post-deployment endorsed the PES in a different way. However, when Bramsen, Dirkzwager, van Esch and van der Ploeg (2001) investigated the consistency of self-reports of peacekeeping exposure in Dutch Cambodia veterans, they found no support for the notion that self-report measures of exposure are confounded with symptoms of PTSD. However, it would be reasonable to argue that soldiers with PTSD symptoms are likely to find their lives more stressful and respond to a Hassles Scale accordingly.

Sharkansky et al (2000) also found that combat exposure had a direct impact on changes in PTSD symptoms but not on depression, but that life stressors since return from the Gulf War were important for both. They discuss the idea that symptoms of PTSD and depression may be precipitated by different things and argue that this makes sense as PTSD symptoms occur in response to both distal and more proximal stressors, whereas depressive symptoms are primarily associated with more proximal stressful events.

4.9 Practical Implications

Results from the current study suggest that the mental health of personnel who deploy on peacekeeping missions can indeed be adversely effected by such service.

Not only did PTSD and depression symptoms increase significantly over the stages of the study for those soldiers who deployed to Bosnia, but this increase was not observed in any of the control groups. This suggests that this increase is unique to deploying on a peacekeeping mission, and is not a factor of deploying overseas on other than peacekeeping duties, or remaining in New Zealand, either within the NZ Army or the civilian sector.

Furthermore, PTSD caseness increased for those soldiers who deployed to Bosnia over the course of the study but not for any of the control groups. While this rate was low, there is no doubt that it was an increase that can be attributable to peacekeeping service. That is, some people could be diagnosed with PTSD after the mission but not beforehand.

It seems that the follow-up stage, six months after return to NZ, is by far the most stressful and that this stress and level of perceived settledness are powerful predictors of both PTSD and depression symptoms at follow-up. The pre-deployment stage was the next most stressful stage of the deployment.

The other critical aspect of peacekeeping service with respect to the development of PTSD symptoms is peacekeeping exposure. The event most closely associated with the development of PTSD symptoms at follow-up is experience with death or serious injury and handling bodies, while witnessing other unpleasant events is also associated with it.

The results suggest that, although the NZDF is doing very well at preparing its personnel for peacekeeping deployments, in that the lowest stress levels were experienced on the deployment itself, they do have an effect on the mental health of those who deploy. It therefore behoves the NZDF to continue to try to prevent and/or alleviate such effects.

Examination of the stressors found to predict PTSD symptoms and/or depression at follow-up, in addition to those that are unique to deploying on a peacekeeping mission as opposed to other duties, provides invaluable information for designing support procedures for soldiers who deploy on peacekeeping duties.

It seems that focus should be primarily on the follow-up and pre-deployment stages, as these are the most stressful. The follow-up stage seems to be the most critical as it has the highest stress levels and the most adverse mental health levels. It is therefore imperative that soldiers continue to be assisted to settle down into life in NZ after a peacekeeping deployment. This is rendered even more important as soldiers are deploying more often and this means that the follow-up stage of one deployment can “merge” with the pre-deployment stage of their next deployment. The following sections present ideas for practical implementation for each deployment stage in turn.

4.9.1 Pre-Deployment

As mentioned previously, it is very important to address the stressors of the pre-deployment stage as current and previous research has found high levels of both daily and deployment stress. Furthermore, it may well be that addressing those stressors common to all stages of the study well before the deployment, has “spin-offs”

throughout all of the other deployment stages. This particularly applies to resources for coping with stress as these could be linked to education, which predicts both PTSD and depression symptoms at follow-up.

Level of confidence in pre-deployment training at the pre-deployment stage was also able to predict both PTSD symptoms and depression at follow-up. It cannot be emphasised strongly enough that efforts to maintain a high level of pre-deployment training, taking account of the “lessons learned” from returning peacekeepers, be continued. However, results suggest that it may not be enough to ensure a high standard of pre-deployment training if soldiers do not have confidence in it. This means that attention should be given to ensuring the highest level of confidence possible.

Daily hassles to the fore at pre-deployment were relationships with other people (including co-workers and superiors), work issues and sex and intimacy. As these were considerably more stressful for those who deployed to Bosnia compared with those who deployed overseas on other duties, they can be considered specific to deploying on a peacekeeping mission.

Relationships with other contingent members are critical, particularly when a contingent is “purpose built”. They could be developed through the inclusion of team building activities and leadership training in pre-deployment training. These activities should be designed in such a way that they develop or increase cohesion as well as trust and faith in leaders.

Leadership training should be specifically designed for the operational situation and should include information on reducing stress and increasing cohesion. It should also include information on those individual and organisational factors and types of incidents that lead to higher risk of adverse mental health outcomes. Ensuring that the psychological input to pre-deployment training is as early as possible will help leaders to identify those areas on which they need to concentrate right from the very beginning. Assuring soldiers that people generally find things less stressful once they deploy may also be of help.

Issues to do with work itself could be addressed by completely releasing soldiers from their NZ job for the pre-deployment period, providing as much information as possible about the job in theatre to ensure relevant preparation and packing, reducing the amount of unnecessary work, not tasking people in off-duty hours and ensuring that work is perceived as meaningful.

Information on dealing with stress caused by sex and intimacy should also be included in pre-deployment training and this should also be early enough to be of maximum utility.

One of the foremost deployment stressors of the pre-deployment stage was the provision of pre-deployment information. Communication of as much information as possible is critical in reducing levels of deployment stress at the pre-deployment stage.

Other frequent and/or severe deployment stressors of the pre-deployment stage were separation and leave. These both seem to relate to, as far as possible, giving personnel who are about to deploy on a peacekeeping mission the chance to spend time as they would like it, with minimal separation from families.

4.9.2 Mid-Deployment

The results suggest that the deployment stage was the least stressful of the stages of the study. However, how stressful or difficult soldiers were finding the deployment during the deployment was able to predict depression at follow-up. Furthermore, certain events such as witnessing unpleasant incidents, death or serious injury were able to predict PTSD symptoms at follow-up. It is therefore sensible to examine the stressors of this stage in order to ensure that the deployment stage is as stress-free as possible for future peacekeepers.

Sex and intimacy were by far the most frequent and severe daily hassles during the deployment itself. Relationships with others, the work itself and news events also caused some stress.

It is difficult to see what can be done about the fact that sex and intimacy are frequent and severe stressors of the deployment stage, except to provide adequate means of communication with friends and family in New Zealand and to ensure that ill-considered attempts to alleviate these are not taken. The availability of professional support staff (e.g. psychologists and chaplains), in theatre, may also help.

More effective relationships with others, including command, may be facilitated by including team building activities at the pre-deployment stage and continuing these, if possible, during the deployment itself. Sport and other forms of physical exercise can, of course, also be beneficial in this respect.

Realistic workloads (neither too much nor too little) are important and previous research (e.g. Bartone & Adler, 1998) highlights how important it is to ensure that work is meaningful. It is also important that off-duty activities are meaningful. For example, activities that involve meeting a goal or developing a skill are particularly important.

News events no doubt caused stress because of the impact of these on family and friends in NZ. If it is at all possible, the NZDF should continue to try to ensure that the real picture is presented. If something appears in the news that is likely to cause family members to worry, they should be contacted and, where possible, given the true picture. Ideally this would be before such an item appeared in the news. It is also important that the deployed soldiers are confident that this is happening.

It is also very important that soldiers perceive that their families are getting adequate support during the deployment, as their perceptions about this, when measured at follow-up, could predict PTSD. This means that the NZDF should not only provide adequate support to families, but this level of support needs to be communicated throughout the deployment.

The specific deployment hassles for those who deployed to Bosnia during the deployment itself concerned restrictions/lack of freedom, boredom, separation, mail, information and rumours, command relationship, language difficulties and relationship with locals. Many of these (e.g. boredom, separation issues and command relationship) have also been identified as stressful in previous research.

It is difficult to suggest what could be done to reduce restrictions other than to ensure that the reasons for such restrictions are communicated, and to continue to ensure that there are as many recreational activities as possible within the confines of the environment. This would also help to reduce boredom, one of the other deployment stressors found in the current study and previous research. Continuing to provide the best possible mail system and including language training in pre-deployment training and even during the deployment would also help to reduce these deployment stressors.

The importance of communication of information about the deployment once again cannot be over-emphasised and this communication would no doubt also help to maintain a good command relationship.

Finally, it is imperative that any soldiers who have been involved in, or witnessed, events involving death or serious injury, or body handling, continue to receive appropriate support from command, their unit and psychologists.

4.9.3 Post-Deployment

As with the mid-deployment stage, less emphasis perhaps needs to be placed on the specific stressors of the post-deployment stage, as this was one of the less stressful periods of the deployment experience for the soldiers who deployed to Bosnia. However, levels of PTSD symptoms rose significantly from pre-deployment to post-deployment, so this suggests the post-deployment stage is indeed important. Furthermore, levels of post-deployment daily hassles and deployment hassles, together with level of daily hassles at follow-up, were able to predict both PTSD

symptoms and depression at follow-up. Therefore, it may well be that careful attention to this stage can help to ameliorate the effects of the next stage, the follow-up stage.

Daily hassles to the fore at this stage were again relationships with other people, work itself and sex and intimacy. These appear to be unique to deploying on a peacekeeping mission rather than other types of overseas deployment. The same recommendations made for the mid-deployment stage apply, as well as making sure that personnel continue to receive “Return to NZ” booklets (which contain information on sex and intimacy) several weeks before the end of the deployment.

The deployment hassles were again very similar to mid-deployment but the main concern was information that related to returning to NZ. For example, dates and postings. The provision of up-to-date information with particular emphasis on information about the return to NZ is thus extremely important.

It is further recommended that soldiers complete a PES in order to help screen those who have, or who are at risk of developing, PTSD symptoms. This is important because not only the current study but previous research (e.g de Vries et al, 2001) highlights the importance of early recognition of symptoms. This should be done as soon after the deployment as possible to minimise problems with memory and to ensure that response style is not influenced by the high levels of daily stress that plague soldiers at the follow-up stage.

Finally, the NZDF should try to acknowledge the lessons learned by all returning peacekeepers so that soldiers feel as if they have made a worthwhile contribution and assisted in future missions.

4.9.4 Follow-Up

Results from the current study and previous research suggest that the follow-up stage, six months after return to NZ, is the most important stage for future attention as not

only were the most frequent and severe daily hassles reported but adverse mental health levels were at their highest. In addition, level of daily stress at this stage, together with levels of daily and deployment stress at the post-deployment stage, was one of the strongest predictors of PTSD symptoms, as well as the strongest predictor of depression symptoms. Furthermore, results from previous research suggest that these effects may last even further into the future than the six month time frame studied in the current research.

It is interesting to note the marked difference between this and the post-deployment stage, whether post-deployment information was gathered at the very end of the deployment as in the current study, or six weeks after the return to NZ, as in MacDonald et al (1999, 1998 & 1996). It seems that something about life at home in NZ makes for higher levels of stress and higher levels of adverse mental health and that this may continue for some time. Certainly how settled soldiers feel back into life in NZ is critical to their mental health at this stage as lower levels of settledness predicted both PTSD symptoms and depression at follow-up. This means that efforts to assist soldiers settle back into life in NZ should continue.

By far the most severe and frequent hassles at this stage for those who deployed to Bosnia were issues to do with work (e.g. nature of work, workload, amount of free time, superiors and fellow workers). Once again this is far more of an issue for the returned peacekeepers than any of the control groups and therefore could be said to be unique to returning from a peacekeeping deployment.

Whatever the case, it is important that the NZDF continue to provide support for personnel after they return from peacekeeping duties. This could include assisting personnel to cope with the changes, doing everything possible to ensure high levels of unit cohesion, addressing job design if possible, and continuing to make personnel feel valued for their current contribution. It would also be wise to extend screening measures currently in place to ensure that checks of mental health are made well after returning from peacekeeping duties.

Another result that may help to pinpoint an important aspect of practical focus is that the less satisfied soldiers were with the support their family received during the

deployment, the higher the level of PTSD symptoms. This means that it is important not only to provide quality assistance to families during deployments but to ensure that soldiers are confident that this is being done.

4.10 Limitations of Current Research and Recommendations for Future Research

While the current research had a number of strengths above many previous studies, in that it was longitudinal, included control groups and utilised multiple outcome measures, it is limited by its reliance on self-report measures alone. Another limitation of the research is that while subjects were informed that information collected would only be used for the purposes of the study, data collected at the pre-deployment stage may have been effected by the fact that personnel did not want to report anything that may have threatened their chance of deploying.

The decreased numbers of participants from all groups at the different stages of the study is always a risk with longitudinal research, and, although analyses revealed no differences between those dropping out and those completing questionnaires at any stage within any of the sample groups, the question of the status of those who “drop out” still remains. Furthermore, lower numbers at the follow-up stage limited the analyses that could be conducted.

Being unable to measure depression at the pre-deployment and mid-deployment stages of the study due to difficulties with permission to use the BDI was also a limitation of the current study.

Finally, the timing of the follow-up questionnaire did not allow the opportunity to measure mental health long enough after the deployment. Given that mental health was at its lowest level at this stage, it is critical to check whether or not it will improve, or become worse, further into the future.

Not only the results of the current study and mixed results from previous research, but also the fact that considerable numbers of military personnel and civilians from many countries are likely to serve on peacekeeping missions in the future, suggest that the psychological effects of this type of service are worthy of further study.

It is recommended that any such further research utilises the same design as the current study (i.e. a controlled longitudinal design with pre-deployment measures, including previous trauma), with stages similar to those in the current study, in addition to further follow-up up to several years after return. Ideally the same outcome measures as those used in the current study would be included in order to maximise the opportunity for comparison of results. A focus on more than just PTSD is essential, as shown by the results from the current study, as is the use of other than self-report measures (e.g. structured clinical interviews, medical data and attrition data). It is further recommended that a measure of alcohol use be included.

The PES shows promise as a way of measuring “peacekeeping exposure”. It is recommended that this be included in future studies so that data is gathered from a wider variety of peacekeeping missions. Not only will this act as a measure of “peacekeeping exposure”, but it will provide a way of comparing different deployment experiences and differing research results. It is also recommended that the factor structure of the PES is validated with a larger sample, and, if necessary, efforts be made to increase factor stability (e.g. generate more items or force fewer factors).

4.11 Conclusions and Recommendations

A number of significant results emerged from the current study, and the robust nature of the controlled, longitudinal design allowed some firm conclusions to be made about the mental health of the personnel who deployed to Bosnia. Results show that peacekeeping service can have an adverse effect on the mental health of those personnel who undertake such duties. Levels of PTSD and depression symptoms and PTSD “caseness” increased throughout the study for soldiers who deployed to Bosnia but for none of the control groups. This suggests that these increases in mental health

were specific to deploying to Bosnia, rather than deploying overseas on other than peacekeeping duties or remaining in NZ in either the NZ Army or in the civilian sector.

Investigation into the stressors of the deployment experience suggest that the most stressful times for personnel who deploy on peacekeeping missions are the follow-up period (six months after return to NZ) and, to a lesser extent, the pre-deployment period. A number of stressors were associated with all deployment stages, and some were unique to each deployment stage.

It seems possible to measure the potentially traumatic stressors involved in peacekeeping service. These are highly associated with PTSD and experience of some types of these events is able to predict PTSD symptoms at follow-up.

It is recommended that further longitudinal, controlled research is conducted into the psychological effects of peacekeeping deployments. This research should utilise as far as possible the same outcome measures as the current study with the addition of a measure of alcohol use and information gained from other than self-report measures. Finally, the final data-collection point should be extended to several years after the deployment.

On a more practical note, the NZDF should continue its efforts to provide psychological support to those who deploy on peacekeeping missions as it seems that personnel cope with the deployment itself very well. However, particular attention needs to be paid to the period after personnel return to New Zealand.

REFERENCES

- Adler, A.B., Vaitkus, M.A. & Martin, J.A. (1996). Combat exposure and posttraumatic stress symptomatology among US soldiers deployed to the Gulf War. *Military Psychology*, 8, 1-14.
- Alpass, F., Long, N., MacDonald, C. & Chamberlain, K. (1996). *The Effects of Work Stress on the Health of Military Personnel*. Palmerston North, New Zealand: Department of Psychology, Massey University.
- Applewhite, L. (1994). Prevention Measures to Reduce Psychosocial Distress in MFO Operations. *Peace Operations: Workshop Proceedings*. US Army Research Institute for the Behavioral and Social Sciences Research Report 1670, 47-52.
- Archer, R.P. & Cauthorne, C.V. (1986). *A Final Report on an Investigation of Deployment Related Factors on Performance and Psychosocial Adjustment*. Office of Naval Research Technical Report #86-1: Norfolk, Virginia.
- Ballone, E., Valentino, M., Occhiolini, L., Di Mascio, C., Cannone, D. & Schioppa, F.S. (2000). Factors influencing psychological stress levels of Italian peacekeepers in Bosnia. *Military Medicine*, 165, 911-915.
- Barrett, D.H., Resnick, H.S., Foy, D.W., Dansky, B.S., Flanders, W.D. & Stroup, N.E. (1996). Combat exposure and adult psychosocial adjustment among US Army veterans serving in Vietnam, 1965-1971. *Journal of Abnormal Psychology*, 105, 575-581.
- Bartone, P.T. & Adler, A. (1999). Cohesion over time in a peacekeeping medical task force. *Military Psychology*, 11, 85-107.

- Bartone, P.T. & Adler, A.B. (1998). Dimensions of psychological stress in peacekeeping operations. *Military Medicine*, 163, 587-593.
- Beck, A.T. & Steer, R.A. (1987). *Beck Depression Inventory Manual*. San Antonio: Psychological Corporation.
- Beckham, E.C. & Leber, W.L. (Eds.) (1985). *Handbook of Depression*. Illinois: Dorsey.
- Beckham, J.C., Feldman, M.E. & Kirby, A.C. (1998). Atrocities exposure in Vietnam combat veterans with chronic posttraumatic stress disorder: Relationship to combat exposure, symptom severity, guilt and interpersonal violence. *Journal of Traumatic Stress*, 11, 777-785.
- Birenbaum, R. (1994). Peacekeeping stress prompts new approaches to mental-health issues in Canadian military. *Canadian Medical Association Journal*, 151, 1484-1489.
- Bolton, E.E., Litz, B.T., Britt, T.W., Adler, A. & Roemer, L. (2001). Reports of prior exposure to potentially traumatic events and PTSD in troops poised for deployment. *Journal of Traumatic Stress*, 14, 249-255.
- Boulanger, G. & Kadushin, C. (1986). *The Vietnam Veteran Redefined: Fact or Fiction*. London: Lawrence Erlbaum Associates.
- Bramsen, I., Dirkzwager, A.J.E. van Esch, S.C.M. & van der Ploeg, H.M. (2001). Consistency of self-reports of traumatic events in a population of Dutch peacekeepers: Reason for optimism? *Journal of Traumatic Stress*, 14, 733-740.
- Bramsen, I., Dirkzwager, A.J.E., & van der Ploeg, H.M. (2000). Predeployment personality traits and exposure to trauma as predictors of posttraumatic stress symptoms: A prospective study of former peacekeepers. *American Journal of Psychiatry*, 157, 1115-1119.
- Breslau, N. & Davis, G.C. (1987). Posttraumatic stress disorder: The etiologic specificity of wartime stressors. *American Journal of Psychiatry*, 144, 578-583.

- Britt, T.W. (2000). The stigma of psychological problems in a work environment: Evidence from the screening of service members returning from Bosnia. *Journal of Applied Social Psychology*, 30, 1599-1618.
- Britt, T.W. (1999). Stress and health during medical humanitarian assistance missions. *Military Medicine*, 164, 275-279.
- Britt, T.W. (1998). Psychological ambiguities in peacekeeping. In H.J. Langholtz (Ed.), *The Psychology of Peacekeeping* (pp 111-130). Westport, CT: Praeger.
- Britt, T.W., Adler, A. & Bartone, P.T. (2001). Deriving benefits from stressful events: The role of engagement in meaningful work and hardiness. *Journal of Occupational Health Psychology*, 6, 53-63.
- Carlstrom, A., Lundin, T. & Otto, U. (1990). Mental adjustment of Swedish UN soldiers in South Lebanon in 1988. *Stress Medicine*, 6, 305-310.
- Cartwright, J.W. (1994). Mental health in support of the Humanitarian Assistance Mission in Baledogle, Somalia. *Peace Operations: Workshop Proceedings*. US Army Research Institute for the Behavioral and Social Sciences Research Report 1670, 53-56.
- Chamberlain, K., Vincent, C. & Long, N. (1994). *New Zealand Vietnam War veterans twenty years on: II: Post-traumatic stress disorder and its effects*. Palmerston North, New Zealand: Department of Psychology, Massey University.
- Corelli, R. (1994). An Army's hidden wounds: When peacekeepers come home, they confront the strain of remembering. *Macleans: Canada's Weekly News Magazine*, 23 March, 31-33.
- Coyne, J.C. & Whiffen, V.E. (1995). Issues in personality as diathesis for depression: The case of sociotropy - dependency and autonomy - self-criticism. *Psychological Bulletin*, 118, 358-378.

- Deahl, M.P., Earnshaw, N.M. & Jones, N. (1994). Psychiatry and War: Learning Lessons from the former Yugoslavia. *British Journal of Psychiatry*, 164, 441-442.
- Deahl, M.P., Srinivasan, M., Jones, N., Neblett, C. & Jolly, A. (2001). Evaluating psychological debriefing: Are we measuring the right outcomes? *Journal of Traumatic Stress*, 14, 527-529.
- Deahl, M.P., Srinivasan, M., Jones, N., Thomas, J., Neblett, C. & Jolly, A. (2000). Preventing psychological trauma in soldiers: The role of operational stress training and psychological debriefing. *British Journal of Medical Psychology*, 73, 77-85.
- Deane, F.P., Leathem, J., & Spicer, J. (1992). Norms, reliability and validity for the Hopkins Symptom Checklist - 21. *Australian Journal of Psychology*, 44, 21-25.
- DeLongis, A., Lazarus, R.S. & Folkman, S. (1988). The impact of daily stress and mood: Psychological and social resources as mediators. *Journal of Personality and Social Psychology*, 54(3), 480-495.
- Donovan, B.S., Padin-Rivera, E., Dowd, T. & Blake, D.D. (1996). Childhood factors and war zone stress in chronic PTSD. *Journal of Traumatic Stress*, 9, 361-368.
- Downie, S. (2002). Peacekeepers and peace-builders under stress. In Y. Danieli (Ed.), *Sharing the Front line and the Back Hills: Peacekeepers, Humanitarian Aid Workers and the Media in the Midst of Crisis*. (pp 8-20). Amityville NY: Baywood.
- Eustace, K.L. (1994). *The Psychological Aftereffects of Cyclone Bola*. Unpublished Masters thesis. Palmerston North, New Zealand: Department of Psychology, Massey University.
- Eyre, K.C. (1994). Peacekeeping Interview Program: Anecdotal data from CANBAT 2 (12e RBC). General Peacekeeping Survey, Oct 93 - Oct 94. *ADGA Systems International Ltd.*

- Farley, K.M. (1995). Stress in Military Operations: Working paper 95-2. *Canadian Forces Personnel Applied Research Unit, Ontario.*
- Fontana, A., Litz, B. & Rosenheck, R. (2000). Impact of combat and sexual harassment on the severity of posttraumatic stress disorder among men and women peacekeepers in Somalia. *Journal of Nervous and Mental Disease*, 188, 163-169.
- Fontana, A. & Rosenheck, R. (1995). Attempted suicide among Vietnam veterans: A model of etiology in a community sample. *American Journal of Psychiatry*, 152, 102-109.
- Fontana, A. & Rosenheck, R. (1994). Posttraumatic stress disorder among Vietnam theatre veterans. A causal model of etiology in a community sample. *Journal of Nervous and Mental Disease*, 182, 677-684.
- Fontana, A. & Rosenheck, R. (1993). A causal model of the etiology of war-related PTSD. *Journal of Traumatic Stress*, 6, 475-500.
- Ford, J.D., Campbell, K.A., Storzbach, D., Binder, L.M., Anger, W.K. & Rohlman, D.S. (2001). Posttraumatic stress symptomatology is associated with unexplained illness attributed to Persian Gulf War military service. *Psychosomatic Medicine*, 63, 842-849.
- Foy, D.W. & Card, J.J. (1987). Combat-related posttraumatic stress disorder etiology: Replicated findings in a national sample of Vietnam-era men. *Journal of Clinical Psychology*, 43, 28-31.
- Foy, D.W., Carroll, E.M. & Donahoe, C.P. (1987). Etiological factors in the development of PTSD in clinical samples of Vietnam combat veterans. *Journal of Clinical Psychology*, 43, 17-27.
- Foy, D.W., Sipprelle, R.C., Rueger, D.B. & Carroll, E.M. (1984). Etiology of posttraumatic stress disorder in Vietnam veterans: Analysis of premilitary, military, and combat exposure influences. *Journal of Consulting and Clinical Psychology*, 52, 79-87.

- Friedman, M.J., Schneiderman, C.K., West, A.N. & Corson, J.A. (1986). Measurement of combat exposure, posttraumatic stress disorder, and life stress among Vietnam combat veterans. *American Journal of Psychiatry*, 143, 537-539.
- Green, B.L., Grace, M.C., Lindy, J.D., Gleser, G.C. & Leonard, A. (1990). Risk factors in PTSD and other diagnoses in a general sample of Vietnam veterans. *American Journal of Psychiatry*, 147, 729-733.
- Green, D.E., Walkey, F.H., McCormick, I.A. & Taylor, J.W. (1988). Development and evaluation of a 21-item version of the Hopkins Symptom Checklist with New Zealand and United States respondents. *Australian Journal of Psychology*, 40, 61-70.
- Hall, D.P. (1996). Stress, suicide, and military service during Operation Uphold Democracy. *Military Medicine*, 161, 159-162.
- Halverson, R.R., Bliese, P.D., Moore, R.E. & Castro, C.A. (1995). *Psychological Well-being and Physical Health of Soldiers Deployed for Operation Uphold Democracy: A Summary of Human Dimensions Research in Haiti*. Walter Reed Army Institute of Research, Department of Military Psychiatry.
- Hamilton-Smith, M. (1994). Australians in the Multinational Force and Observers - An Alternative to the United Nations, *Australian Defence Force Journal*, 104, 68-82.
- Han, C.S. & Kim, Y.K. (2001). Psychiatric symptoms reported by international peacekeeping personnel in the Western Sahara Desert. *Journal of Nervous and Mental Disease*, 189, 858-860.
- Harris, J.J. (1994). Human Dimensions of Peacekeeping: Sinai Observations - The First Iteration. *Peace Operations: Workshop Proceedings*. US Army Research Institute for the Behavioral and Social Sciences Research Report 1670, 37-46.
- Harleman, C. (1998). Psychological aspects of peacekeeping on the ground. In H.J. Langholtz (Ed.), *The Psychology of Peacekeeping* (pp 101-110). Westport, CT: Praeger.

- Headquarters Defence Command Norway. (1993). *The UNIFIL study: 1991 to 1992. Report - Part I: Results and Recommendations*. Issued by Headquarters Defence Command Norway, The Joint Medical Service.
- Holmes, T.H. (1976). *Schedule of Recent Experience*. Seattle, Washington: Department of Psychiatry and Behavioral Sciences, University of Washington School of Medicine.
- Holmes, T.H. & Rahe, R.H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research*, 11, 213-218.
- Janes, G.R., Goldberg, J., Eisen, S.A. & True, W.R. (1991). Reliability and validity of a combat exposure index for Vietnam era veterans. *Journal of Clinical Psychology*, 47, 80-86.
- Johnston, I. (2001). The psychological impact of peacekeeping deployment. *Human Dimensions of Deployments Among TTCP Nations* (pp 16-22). The Technical Cooperation Program, Technical Panel HUM TP-3 Military Human Resources Issues, Report TTCP/HUM/01/001.
- Keane, T.M., Caddell, J. & Taylor, K.L. (1988). Mississippi scale for combat-related post-traumatic stress disorder: Three studies in reliability and validity. *Journal of Consulting and Clinical Psychology*, 56, 85-90.
- Keane, T.M., Fairbank, J.A., Caddell, J.M., Zimering, R.T., Taylor, K.L. & Mora, C.A. (1989). Clinical evaluation of a scale to assess combat exposure. *Journal of Consulting and Clinical Psychology*, 1, 53-55.
- Keane, T.M., Newman, E. & Orsillo, S.M. (1997). Assessment of military-related posttraumatic stress disorder. In J.P. Wilson & T.M. Keane (Eds.), *Assessing Psychological Trauma and PTSD* (pp 267-290). New York: Guilford.
- Kettner, B. (1972). Combat strain and subsequent mental health: A follow-up study of Swedish soldiers serving in the United Nations forces 1961-62. *Acta Psychiatrica Scandinavica*, 230, 1-1.

- Kidwell, B. & Langholtz, H.J. (1998). Personnel selection, preparation, and training for UN peacekeeping missions. In H.J. Langholtz (Ed.), *The Psychology of Peacekeeping* (pp 89-100). Westport, CT: Praeger.
- Kodama, Y., Nomura, S. & Ogasawara, T. (2000). Psychological changes of Japan Self-Defense Forces Personnel during selection and training for the peacekeeping mission in the Golan Heights. *Military Medicine*, 165, 653-655.
- Kubany, E.S., Abeug, F.R., Kilauano, W.L., Manke, F.P. & Kaplan, A.S. (1997). Development and validation of the Sources of Trauma-Related Guilt Survey – War-Zone Version. *Journal of Traumatic Stress*, 10, 235-258.
- Lamerson, C.D. & Kelloway, E.K. (1996). Towards a model of peacekeeping stress: Traumatic and contextual influences. *Canadian Psychology*, 37, 195-204.
- Larsson, G., Michel, P-O. & Lundin, T. (2000). Systematic evaluation of mental health following various types of posttrauma support. *Military Psychology*, 12, 121-135.
- Lee, K.A., Vaillant, G.E., Torrey, W.C. & Elder, G.H. (1995). A 50-year prospective study of the psychological sequelae of World War II combat. *American Journal of Psychiatry*, 152, 516-522.
- Litz, B.T. (1996). The psychological demands of peacekeeping. *NCP Clinical Quarterly*, 6, 108-115.
- Litz, B.T., King, L.A., King, D.W., Orsillo, S.M. & Friedman, M.J. (1997a). Warriors as peacekeepers: Features of the Somalia experience and PTSD. *Journal of Consulting and Clinical Psychology*, 65, 1001-1010.
- Litz, B.T., Orsillo, S.M., Friedman, M., Ehlich, P. & Batres, A. (1997b). Posttraumatic stress disorder associated with peacekeeping duty in Somalia for US Military Personnel. *American Journal of Psychiatry*, 154, 178-184.

- Long, N., Vincent, C. & Chamberlain, K. (1995). The impact of the Bosnian conflict on the health and mental health of New Zealanders. *The New Zealand Medical Journal*, 108, 25-27.
- Lu, L. (1991). Daily hassles and mental health: A longitudinal study. *British Journal of Psychology*, 82, 441-447.
- Lund, M., Foy, D., Sippelle, C. & Strachan, A. (1984). The Combat Exposure Scale: A systematic assessment of trauma in the Vietnam war. *Journal of Clinical Psychology*, 40, 1323-1328.
- Lundin, T. & Otto, U. (1996). Swedish soldiers in peacekeeping operations: Stress reactions following missions in Congo, Lebanon, Cyprus, and Bosnia. *NCP Clinical Quarterly*, 6, 9-15.
- Lundin, T. & Otto, U. (1992). Swedish UN Soldiers in Cyprus, UNFICYP: Their psychological and social situation. *Psychotherapy and Psychosomatics*, 57, 87-193.
- Lundin, T. & Otto, U. (1989). Stress reactions among Swedish health care personnel in UNIFIL, South Lebanon 1982-1984. *Stress Medicine*, 5, 237-246.
- MacDonald, C., Chamberlain, K. & Long, N. (1997). Race, combat, and PTSD in a community sample of New Zealand Vietnam war veterans. *Journal of Traumatic Stress*, 10, 117-124.
- MacDonald, C., Chamberlain, K., Long, N. & Mirfin, K. (1999). Stress and mental health status associated with peacekeeping duty for New Zealand Defence Force personnel. *Stress Medicine*, 15, 235-241.
- MacDonald, C., Chamberlain, K., Long, N. & Mirfin, K. (1996). *Psychological Effects of Peacekeeping Deployments on Military Personnel*. Palmerston North, New Zealand: Department of Psychology, Massey University.

- MacDonald, C., Chamberlain, K., Long, N., Pereira-Laird, J. & Mirfin, K. (1998). Mental health, physical health, and stressors reported by New Zealand Defence Force peacekeepers: A longitudinal study. *Military Medicine*, 163, 477-481.
- McFall, M.E., Smith, D.E., Mackay, P.W. & Tarver, D.J. (1990). Reliability and validity of Mississippi scale for combat-related posttraumatic stress disorder. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, 2, 114-121.
- Mehlum, L. (1999). Alcohol and stress in Norwegian United Nations peacekeepers. *Military Medicine*, 164, 720-724.
- Mirfin, K.A. (1995). *New Zealand Defence Force Psychologists Contribution to Peacekeeping Operations*. Paper presented to HUM TP-3 Working Group on Management of Stress in Deployed Operations Meeting, Sydney.
- Norwood, A.E.; Gabbay, F.H. & Ursano, R.J. (1997). Health effects of the stressors of extreme environments on military women. *Military Medicine*, 162, 643-648.
- O'Brien, L.S. (1994). What will be the psychiatric consequences of the war in Bosnia?: A bad war from the psychiatric point of view, leading to hidden pathology. *British Journal of Psychiatry*, 164, 443-337.
- Orsillo, S.M., Roemer, L., Litz, B.T., Ehlich, P. & Friedman, M.J. (1998). Psychiatric symptomatology associated with contemporary peacekeeping: An examination of post-mission functioning among peacekeepers in Somalia. *Journal of Traumatic Stress*, 11, 611-624.
- O'Toole, B.I., Marshall, R.P., Schurek, R.J. & Dobson, M. (1999). Combat, dissociation, and posttraumatic stress disorder in Australian Vietnam veterans. *Journal of Traumatic Stress*, 12, 625-640.
- Pearn, J. (2000). Traumatic stress disorders: A classification with implications for prevention and management. *Military Medicine*, 165, 434-440.

- Prigerson, H.G., Rosenheck, R.A. & Maciejewski, P.K. (2002). Population attributable fractions of psychiatric disorders and behavioral outcomes associated with combat exposure among US men. *American Journal of Public Health*, 92, 59-63.
- Ritchie, E.C., Anderson, M.W. & Ruck, D.C. (1994). The 528th Combat Stress Control Unit in Somalia in support of Operation Restore Hope. *Military Medicine*, 159, 372-376.
- Rosebush, P.A. (1998). Psychological intervention with military personnel in Rwanda. *Military Medicine*, 163, 559-563.
- Schumm, W.R. & Bell, D.B. (2000). Soldiers at risk for individual readiness or morale problems during a six-month peacekeeping deployment to the Sinai. *Psychological Reports*, 87, 623-633.
- Schumm, W.R., Bell, D.B. & Gade, P.A. (2000). Effects of a military overseas peacekeeping deployment on marital quality, satisfaction, and stability. *Psychological Reports*, 87, 815-821.
- Schumm, W.R., Jurich, A.P., Stever, J.A., Sanders, D., Castelo, C & Bolman, S.R. (1998). Attitudes of reserve component servicemembers regarding the consequences of frequent overseas deployments. *Psychological Reports*, 83, 983-989.
- Segal, D.R. (2001). Is a peacekeeping culture emerging among American infantry in the Sinai MFO? *Journal of Contemporary Ethnography*, 30, 607-636.
- Sharkansky, E.J., King, D.W., King, L.A., Wolfe, J., Erickson, D.J. & Stokes, L.R. (2000). Coping with Gulf War combat stress: Mediating and moderating effects. *Journal of Abnormal Psychology*, 109, 188-197.
- Singh, A.R., Banerjee, K.R. & Chaudhury, S. (2001). Mental health during war: An experience and lesson from the past. *Journal of Projective Psychology and Mental Health*, 8, 135-140.

- Solomon, Z., Mikulincer, M. & Hobfoll, S.E. (1987). Objective versus subjective measurement of stress and social support: combat-related reactions. *Journal of Consulting and Clinical Psychology*, 55, 577-583.
- Southwick, S.M., Morgan, C.A., Darnell, A., Bremner, D., Nicolaou, A.L., Nagy, L.M. & Charney, D.S. (1995). Trauma-related symptoms in veterans of Operation Desert Storm: A 2-year follow-up. *American Journal of Psychiatry*, 152, 1150-1155.
- Stretch, R.H., Durand, D. & Knudson, K.H. (1998). Effects of pre-military and military trauma on the development of post-traumatic stress disorder symptoms in female and male active duty soldiers. *Military Medicine*, 163, 466-470.
- Sutker, P.B., Uddo, M., Brailey, K., Vasterling, J.J. & Errera, P. (1994). Psychopathology in war-zone deployed and nondeployed Desert Storm troops assigned graves registration duties. *Journal of Abnormal Psychology*, 103, 383-390.
- Spielberger, C.D. (1983). *Manual for the State-Trait Anxiety Inventory for Adults*. Palo Alto, CA: Mind Garden.
- TTCP/SGU/96/002 (1996). *Minutes of Meeting of Special Action Group into the Management of Stress in Deployed Operations 24 - 30 May 1995*. The Technical Cooperation Programme, Subgroup U (Human Resources and Performance), Technical Panel UTP-3 (Military Human Resources Issues).
- Unger, W.S., Gould, R.A. & Babich, M. (1998). The development of a scale to assess war-time atrocities: The War Events Scale. *Journal of Traumatic Stress*, 11, 375-383.
- Veit, C.T. & Ware, J.E. (1983). The structure of psychological distress and well-being in general populations. *Journal of Consulting and Clinical Psychology*, 51, 730-742.
- Vincent, C., Chamberlain, K. & Long, N. (1994). *New Zealand Vietnam war veterans twenty years on: I: Mental health, physical health, and stress*. Palmerston North, New Zealand: Department of Psychology, Massey University.

- Vincent, C., Long, N. & Chamberlain, K. (1994). Relation of military service variables to posttraumatic stress disorder in New Zealand Vietnam war veterans. *Military Medicine*, 159, 322-326.
- Vincent, C., Long, N. & Chamberlain, K. (1991). *Health, mental health, and well-being of New Zealand Vietnam Veterans*. Palmerston North, New Zealand: Department of Psychology, Massey University.
- Vries, M. de, Soetekouw, P.M.M.B., Meer, J.W.M. van der & Bleijenberg, G. (2001). Natural course of symptoms in Cambodia veterans: A follow-up study. *Psychological Medicine*, 31, 331-338.
- Vries, M. de, Soetekouw, P.M.M.B., Meer, J.W.M. van der & Bleijenberg, G. (2000). Fatigue in Cambodia veterans. *Quarterly Journal of Medicine*, 93, 283-289.
- Wallenius, C., Johansson, C.R. & Larsson, G. (2002). Reactions and performance of Swedish peacekeepers in life-threatening situations. *International Peacekeeping*, 9, 133-152.
- Ward, W. (1997). Psychiatric morbidity in Australian veterans of the United Nations peacekeeping force in Somalia. *Australian and New Zealand Journal of Psychiatry*, 31, 184-193.
- Ward, W. (1995). Psychological adjustment in Australian veterans of the United Nations Peacekeeping Force in Somalia. *Paper presented at the Royal Australian and New Zealand College of Psychiatrists Annual Congress, Cairns*.
- Watson, G.C. (1990). Psychometric post-traumatic stress disorder measurement techniques: A review. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, 2, 460-469.
- Watson, G.C., Juba, M.P. & Anderson, P.E. (1989). Validities of five combat scales. *Psychological Assessment*, 1, 98-102.

- Weerts, J.M.P., White, W., Adler, A.B., Castro, C.A., Algra, G., Bramsen, I., Dirkzwager, A.J.E., van der Ploeg, H.M., de Vries, M. & Zijlmans, A. (2002). Studies on military peacekeepers. In Y. Danieli (Ed.), *Sharing the Front Line and the Back Hills: Peacekeepers, Humanitarian Aid Workers and the Media in the Midst of Crisis*. (pp 31-48). Amityville NY: Baywood.
- Weisaeth, L. & Sund, A. (1982). Psychiatric problems in UNIFIL and the UN Soldier's Stress syndrome. *Revue Internationale: des services de sante: International Review of the Army, Navy and Air Force Medical services*, 55, 109-116.
- Weissman, M.M., Markowitz, J.C. & Klerman, M.D. (2000). *Comprehensive Guide to Interpersonal Psychotherapy*. New York: Basic Books.
- Wolfe, J., Erickson, D.J., Sharkansky, E.J., King, D.W. & King, L.A. (1999). Course and predictors of posttraumatic stress disorder among Gulf War veterans: A prospective analysis. *Journal of Consulting and Clinical Psychology*, 67, 520-528.
- Wong, A., Escobar, M., Lesage, A., Loyer, M., Vanier, C. & Sakinofsky, I. (2001). Are UN peacekeepers at risk for suicide? *Suicide and Life-Threatening Behaviour*, 31, 103-112.
- Yehuda, R., Southwick, S.M. & Giller, E.L. (1992). Exposure to atrocities and severity of chronic posttraumatic stress disorder in Vietnam combat veterans. *American Journal of Psychiatry*, 149, 333-336.

APPENDIX A

PRE-DEPLOYMENT QUESTIONNAIRE FOR EXPERIMENTAL GROUP

Deployment Research

Participant Consent:

I (print full name) have been fully briefed about this study and understand the details of the research. I understand that I may ask questions at any time, decline to answer any items in the questionnaire and/or withdraw from the study at any time.

I have given my name so that the researchers (Army Psychology Service) can ask me to complete three further questionnaires at different stages of the deployment. However, I understand that this page will be detached from the questionnaire and kept in confidence by the researchers.

I further understand that the information given will be confidential to the researchers. It will be used solely for the purposes of the research except for some raw data which may be required by the publishers of two of the scales in return for permission to use their scales. Names and other identifying information will **not** be given with this raw data.

Signed:

Date:/...../.....

Instructions:

Please try to answer all of the questions without discussing them with anyone as it is important that you give your own answers. The questionnaire may look long but it will take only 30 minutes or so to complete. Please try not to skip any pages.

Please turn the page and begin.

Firstly we would like some general background information about you. Please circle the number for the answer which is best for you, or give details in the spaces provided.

What is your date of birth?/...../.....

What is your sex? Male 1
Female 2

What is your present marital status?

Single (ie never married) 1
In a long-term relationship but not living together 2
Married/Remarried (including defacto) 3
Separated/divorced 4
Widowed 5

What are your usual living arrangements?

Living in Barracks or Hostel 1
Living with partner and children 2
Living with partner no children 3
Sole adult with children 4
Living alone 5
Living with other adults (eg parents, flatmates)..... 6
Other, specify _____ 7

Where do you usually live?

Barracks	1
Service Housing	2
Private rented accommodation	3
Own home	4
Other, specify _____	5

What is your nationality? _____

What ethnic group do you belong to?

New Zealand Maori	1
New Zealand European/Pakeha	2
Pacific Islander	3
Asian	4
Other, specify _____	5

What is your highest formal educational qualification?

No school qualification	1
School Certificate passes	2
Sixth Form Certificate	3
University Entrance (or equivalent) qualification	4
Bursary or Scholarship	5
Trade or Professional certificate or diploma.....	6
Part-Degree or Diploma.....	7
Bachelor Degree	8
Postgraduate qualification.....	9

The next set of questions relate to some aspects of your military experience. Please give details in the spaces provided but don't fill in the boxes on the right hand side of the page.

Service number _____

Date of enlistment in Regular Force _____

If you have ever been enlisted in the Territorial Force, how long did you serve?

If there is anything unusual about your enlistment in the military (such as re-enlistment after leaving the service, or being employed on the special service list), please explain briefly:

What is your present rank? _____

If you have **acting** rank for this deployment, please specify.

What is your trade? _____

What is your corps? _____

What Unit were you in when you were selected for this deployment?

What is your gross annual income (excluding allowances)?

\$ _____

Are you a reserve for this contingent? (please circle)

Yes 1

No 2

Please give brief details below of **all the overseas deployments** which you have been on:

Operational deployments (eg UN Missions, Gulf War etc)

Total number of deployments _____

Total amount of time spent away _____

Other deployments (eg courses, exercises etc)

Total number of deployments _____

Total amount of time spent away _____

Hassles are irritants - things that annoy or bother you. They can make you upset or angry. Some hassles occur on a fairly regular basis and others are relatively rare.

These questions list things that can be hassles in day-to-day life. Please indicate how much of a hassle each item was for you over the past few days by circling the appropriate number.

How much of a hassle was each of the following for you over the past few days?

0..... 1 2 3

not at all somewhat quite a bit a great deal

or

not applicable

Your spouse or partner	0	1	2	3
Your child(ren)	0	1	2	3
Your parents or parents-in-law	0	1	2	3
Other relative(s)	0	1	2	3
Time spent with family	0	1	2	3
Health or well being of a family member	0	1	2	3
Sex	0	1	2	3
Intimacy	0	1	2	3

How much of a hassle was each of the following for you over the past few days?

	0.....	1.....	2.....	3.....
	not at all	somewhat	quite a bit	a great deal
	or			
	not applicable			
Family-related obligations	0	1	2	3
Your friend(s)	0	1	2	3
Fellow workers / contingent members	0	1	2	3
Clients, customers, patients etc (people you provide a service for)	0	1	2	3
Your supervisor, employer or superior	0	1	2	3
The nature of your work	0	1	2	3
Your work load	0	1	2	3
Your job security	0	1	2	3
Meeting deadlines or goals on the job	0	1	2	3
Enough money for necessities (eg food, clothing, housing, health care, taxes, insurance)	0	1	2	3
Enough money for education	0	1	2	3
Enough money for emergencies	0	1	2	3
Enough money for extras (eg entertainment, recreation, vacations)	0	1	2	3
Financial care for someone who doesn't live with you	0	1	2	3
Investments	0	1	2	3
Your smoking	0	1	2	3
Your drinking	0	1	2	3
Mood-altering drugs	0	1	2	3
Your physical appearance	0	1	2	3
Contraception	0	1	2	3
Physical exercise	0	1	2	3
Your medical care	0	1	2	3
Your health	0	1	2	3

How much of a hassle was each of the following for you over the past few days?

	0.....	1	2	3
	not at all	somewhat	quite a bit	a great deal
	or			
	not applicable			
Your physical abilities	0	1	2	3
The weather / climate	0	1	2	3
News events.....	0	1	2	3
Your environment (eg quality of air, noise level, greenery)	0	1	2	3
Political or social issues.....	0	1	2	3
Your neighbourhood / living conditions (eg neighbours, setting)	0	1	2	3
Conserving (gas, electricity, water, petrol, etc)	0	1	2	3
Pets	0	1	2	3
Cooking	0	1	2	3
Housework	0	1	2	3
Home repairs	0	1	2	3
Gardening, lawns etc.....	0	1	2	3
Car maintenance	0	1	2	3
Taking care of paperwork (eg paying bills, filling out forms)	0	1	2	3
Home entertainment (eg TV, music, reading)	0	1	2	3
Amount of free time	0	1	2	3
Recreation and entertainment outside the home (eg movies, sport, eating out, walking)	0	1	2	3
Eating (daily meals)	0	1	2	3
Church or community organisations.....	0	1	2	3
Legal matters	0	1	2	3
Being organised	0	1	2	3
Social commitments	0	1	2	3

Now we would like you to think about some things to do with the deployment that may have been stressful for you.

How stressful has each of the following been for you?

	0.....	1	2	3
	not at all	somewhat	quite a bit	very much
Pre-deployment information	0	1	2	3
Press / media relations	0	1	2	3
Rumours	0	1	2	3
Financial concerns / allowances	0	1	2	3
Separation	0	1	2	3
Your working conditions	0	1	2	3
Boredom	0	1	2	3
Restrictions / lack of freedom	0	1	2	3
Isolation	0	1	2	3
Lack of control over events	0	1	2	3
Loneliness	0	1	2	3
Your personal safety	0	1	2	3
Feelings of guilt	0	1	2	3
Leave	0	1	2	3
Travel, travel arrangements	0	1	2	3
Supplies, personal equipment	0	1	2	3
Command relationship	0	1	2	3
Your subordinates	0	1	2	3
Other Army personnel not going on this deployment	0	1	2	3

What other things, if any, have been stressful for you from the time you heard you were going on this deployment until the present time?

Now we would like to ask you a few more questions about the deployment. Circle the number which best describes how you feel.

Was the amount of notice you had for this deployment:

1 2 3
just right? too little? too much?

How much confidence do you have in your pre-deployment training?

1 2 3 4 5
none at all complete
confidence

How important do you believe this deployment / mission to be?

1 2 3 4 5
not at all very
important important

How much do you want to go on this deployment?

1 2 3 4 5
not at all very much

How worried or anxious are you about this deployment?

1 2 3 4 5
very anxious not at all
anxious

How well do you think you will cope with the deployment?

1 2 3 4 5
not at very
well well

How satisfied are you with the Army as a way of life?

1 2 3 4 5
very very
dissatisfied satisfied

What are your major worries about this deployment?

These next questions are about how you feel, and how things have been with you over the last month. For each question, please circle a number for the answer that comes closest to the way you have been feeling.

How happy, satisfied, or pleased have you been with your personal life during the past month?

1 2 3 4 5 6 7
extremely extremely
happy unhappy

How much of the time have you felt lonely during the past month?

1 2 3 4 5 6 7
all of the none of the
time time

How often did you become nervous or jumpy when faced with excitement or unexpected situations during the past month?

1 2 3 4 5 6 7
always never

During the past month, how much of the time have you felt that the future looks hopeful and promising?

1 2 3 4 5 6 7
all of the none of the
time time

How much of the time, during the past month, has your daily life been full of things that were interesting to you?

1..... 2 3 4 5 6 7
all of the time none of the time

How much of the time, during the past month, did you feel relaxed and free of tension?

1..... 2 3 4 5 6 7
all of the time none of the time

During the past month, how much of the time have you generally enjoyed the things you do?

1..... 2 3 4 5 6 7
all of the time none of the time

During the past month, have you had any reason to wonder if you were losing your mind, or losing control over the way you act, talk, think, feel, or of your memory?

1..... 2 3 4 5 6 7
not at all very much

Did you feel depressed during the past month?

1..... 2 3 4 5 6 7
very much not at all

During the past month, how much of the time have you felt loved and wanted?

1..... 2 3 4 5 6 7
all of the time none of the time

How much of the time, during the past month, have you been a very nervous person?

1..... 2 3 4 5 6 7
all of the time none of the time

When you got up in the morning, this last month, about how often did you expect to have an interesting day?

1.....234567
always never

During the past month, how much of the time have you felt tense or "high-strung"?

1 2 3 4 5 6 7
all of the none of the
time time

During the past month, have you been in firm control of your behaviour, thoughts, emotions, feelings?

1..... 2 3 4 5 6 7
yes, very no, I am very
definitely disturbed

During the past month, how often did your hands shake when you tried to do something?

[illegible]

During the past month, how often did you feel that you had nothing to look forward to?

[illegible]

How much of the time, during the past month, have you felt calm and peaceful?

1 2 3 4 5 6 7
all of the none of the
time time

How much of the time, during the past month, have you felt emotionally stable?

1 2 3 4 5 6 7
all of the none of the
time time

How much of the time, during the past month, have you felt downhearted and blue?

1.....2.....3.....4.....5.....6.....7
all of the none of the
time time

How often have you felt like crying, during the past month?

1.....234567
always never

During the past month, how often did you feel that others would be better off if you were dead?

1.....234567
always never

How much of the time, during the past month, were you able to relax without difficulty?

1..... 2 3 4 5 6 7
all of the none of the
time time

During the past month, how much of the time did you feel that your love relationships, loving and being loved, were full and complete?

1..... 2 3 4 5 6 7
all of the none of the
time time

How often, during the past month, did you feel that nothing turned out for you the way you wanted it to?

1.....234567
always never

How much have you been bothered by nervousness, or your "nerves", during the past month?

1 2 3 4 5 6 7
extremely not at all

During the past month, how much of the time has living been a wonderful adventure for you?

1 2 3 4 5 6 7

all of the time none of the time

How often, during the past month, have you felt so down in the dumps that nothing could cheer you up?

[illegible]

During the past month, how much of the time have you been in low or very low spirits?

1..... 2 3 4 5 6 7
all of the none of the
time time

How often, during the past month, have you been waking up feeling fresh and rested?

1..... 2 3 4 5 6 7
always never

During the past month, have you been under or felt you were under any strain, stress, or pressure?

1..... 2 3 4 5 6 7
yes, more than no, not at
I could bear all

Below are a number of sentences about how you may have felt during the past seven days, including today. Circle the appropriate number to describe how distressing you have found these things over this time.

1..... 2..... 3..... 4
NOT AT ALL A LITTLE QUITE A BIT EXTREMELY

Difficulty in speaking when you are excited	1	2	3	4
Trouble remembering things	1	2	3	4
Worried about sloppiness or carelessness	1	2	3	4
Blaming yourself for things	1	2	3	4
Pains in the lower part of your back	1	2	3	4
Feeling lonely	1	2	3	4
Feeling blue	1	2	3	4
Your feelings are being easily hurt	1	2	3	4
Feeling others do not understand you or are unsympathetic	1	2	3	4
Feeling that people are unfriendly or dislike you	1	2	3	4
Having to do things very slowly in order to be sure you are doing them right	1	2	3	4
Feeling inferior to others.....	1	2	3	4
Soreness of your muscles.....	1	2	3	4

Having to check and double check what you do.....	1	2	3	4
Hot or cold spells	1	2	3	4
Your mind going blank.....	1	2	3	4
Numbness or tingling in parts of your body	1	2	3	4
A lump in your throat.....	1	2	3	4
Trouble concentrating.....	1	2	3	4
Weakness in parts of your body	1	2	3	4
Heavy feelings in your arms and legs	1	2	3	4

The following are statements which could describe thoughts you may have had over the last month or so. Please circle the number that best describes how true you feel each statement is for you.

In the past, I had more close friends than I have now.

1.....	2.....	3.....	4.....	5.....
not at all true	slightly true	somewhat true	very true	extremely true

I do not feel guilt over things that I did in the past.

1.....	2.....	3.....	4.....	5.....
never true	rarely true	sometimes true	usually true	always true

If someone pushes me too far, I am likely to become violent.

1.....	2.....	3.....	4.....	5.....
very unlikely	unlikely	somewhat unlikely	very likely	extremely likely

If something happens that reminds me of the past, I become very distressed and upset.

1.....	2.....	3.....	4.....	5.....
never	rarely	sometimes	frequently	very frequently

The people who know me best are afraid of me.

1.....	2.....	3.....	4.....	5.....
never true	rarely true	sometimes true	frequently true	very frequently true

I am able to get emotionally close to others.

1.....	2.....	3.....	4.....	5.....
never	rarely	sometimes	frequently	very frequently

I have nightmares of experiences in my past that really happened.

1.....	2.....	3.....	4.....	5.....
never	rarely	sometimes	frequently	very frequently

When I think of some of the things I have done in the past, I wish I were dead.

1.....	2.....	3.....	4.....	5.....
never true	rarely true	sometimes true	frequently true	very frequently true

It seems as if I have no feelings.

1.....	2.....	3.....	4.....	5.....
not at all true	rarely true	sometimes true	frequently true	very frequently true

Lately, I have felt like killing myself.

1.....	2.....	3.....	4.....	5.....
not at all true	slightly true	somewhat true	very true	extremely true

I fall asleep, stay asleep and awaken only when the alarm goes off.

1.....	2.....	3.....	4.....	5.....
never	rarely	sometimes	frequently	very frequently

I wonder why I am still alive when others have died.

1.....	2.....	3.....	4.....	5.....
never	rarely	sometimes	frequently	very frequently

Being in certain situations makes me feel as though I am back in the past.

1.....	2.....	3.....	4.....	5.....
never	rarely	sometimes	frequently	very frequently

My dreams at night are so real that I waken in a cold sweat and force myself to stay awake.

- | | | | | |
|--------|--------|-----------|------------|-----------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| never | rarely | sometimes | frequently | very frequently |

I feel like I cannot go on.

- | | | | | |
|-----------------|-------------|----------------|-----------|--------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| not at all true | rarely true | sometimes true | very true | almost always true |

I do not laugh or cry at the same things other people do.

- | | | | | |
|-----------------|-------------|---------------|-----------|----------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| not at all true | rarely true | somewhat true | very true | extremely true |

I still enjoy doing many things that I used to enjoy.

- | | | | | |
|------------|-------------|----------------|-----------|-------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| never true | rarely true | sometimes true | very true | always true |

My day dreams are very real and frightening.

- | | | | | |
|------------|-------------|----------------|-----------------|----------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| never true | rarely true | sometimes true | frequently true | very frequently true |

I have found it easy to keep a job.

- | | | | | |
|-----------------|---------------|---------------|-----------|----------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| not at all true | slightly true | somewhat true | very true | extremely true |

I have trouble concentrating on tasks.

- | | | | | |
|------------|-------------|----------------|-----------------|----------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| never true | rarely true | sometimes true | frequently true | very frequently true |

I have cried for no good reason.

1 2 3 4 5
never rarely sometimes frequently very frequently

I enjoy the company of others.

1 2 3 4 5
never rarely sometimes frequently very frequently

I am frightened by my urges.

1 2 3 4 5
never rarely sometimes frequently very frequently

I fall asleep easily at night.

1 2 3 4 5
never rarely sometimes frequently very frequently

Unexpected noises make me jump.

1 2 3 4 5
never rarely sometimes frequently very frequently

No one understands how I feel, not even my family.

1 2 3 4 5
not at all rarely somewhat very extremely
true true true true true

I am an easy-going, even-tempered person.

1 2 3 4 5
never rarely sometimes usually very muchso

I feel there are certain things that I have done that I can never tell anyone, because no one would ever understand.

1.....	2.....	3.....	4.....	5.....
not at all	slightly	somewhat	true	very
true	true	true		true

There have been times when I used alcohol (or other drugs) to help me sleep or to make me forget about things that happened in the past.

1.....	2.....	3.....	4.....	5.....
never	infrequently	sometimes	frequently	very
				frequently

I feel comfortable when I am in a crowd.

1.....	2.....	3.....	4.....	5.....
never	rarely	sometimes	usually	always

I lose my cool and explode over minor everyday things.

1.....	2.....	3.....	4.....	5.....
never	rarely	sometimes	frequently	very
				frequently

I am afraid to go to sleep at night.

1.....	2.....	3.....	4.....	5.....
never	rarely	sometimes	frequently	almost always

I try to stay away from anything that will remind me of things which happened in the past.

1.....	2.....	3.....	4.....	5.....
never	rarely	sometimes	frequently	almost always

My memory is as good as it ever was.

1.....	2.....	3.....	4.....	5.....
not at all	rarely	somewhat	usually	almost always
true	true	true	true	true

I have a hard time expressing my feelings, even to the people I care about.

1.....	2.....	3.....	4.....	5.....
not at all	rarely	sometimes	frequently	almost always
true	true	true	true	true

At times I suddenly act or feel as though something that happened in the past were happening all over again.

1.....	2.....	3.....	4.....	5.....
not at all	rarely	sometimes	frequently	almost always
true	true	true	true	true

I am not able to remember some important things that happened in the past.

1.....	2.....	3.....	4.....	5.....
not at all	rarely	sometimes	usually	almost always
true	true	true	true	true

I feel "superalert" or "on guard" much of the time.

1.....	2.....	3.....	4.....	5.....
not at all	rarely	sometimes	frequently	almost always
true	true	true	true	true

If something happens that reminds me of the past, I get so anxious or panicky that my heart pounds hard; I have trouble getting my breath, I sweat, tremble or shake; or feel dizzy, tingly, or faint.

1.....	2.....	3.....	4.....	5.....
never	rarely	sometimes	frequently	very frequently

THANK YOU FOR YOUR PARTICIPATION
WE WISH YOU WELL WITH THE DEPLOYMENT

APPENDIX B

LATER LITERATURE ON “COMBAT EXPOSURE”

Keane et al (1997) discuss four conceptual approaches encompassed by Combat Exposure scales, and it is interesting to note that the content of the PES items in the current study spans these four approaches. Traditional combat experiences involving danger, loss of life or severe injury were represented by items such as *“How often were you in an area receiving small arms or sniper fire?”*. An example of an item that covers war-zone experiences outside the realm of traditional combat is *“How often did you see people suffering severe illness/starvation/mutilation?”*. Enduring adversity is represented by items such as *“How often were you bothered by your living conditions?”* while emotional appraisal of events was covered by one item that summarised feelings of perceived safety. That is, *“How often did you fear for your life or personal safety?”*.

Unger et al (1998) advise not using the word “atrocities” because of the “powerful negative and judgmental connotations” associated with this term (p 376). This word is not used in the PES, rather events that could possibly be classified as such are described in a factual manner.

Subsequent to the collection of the data for the current study, other authors have also found exposure to “atrocities” to be important in the development of PTSD (e.g. O’Toole et al, 1999 and Beckham et al, 1998).

APPENDIX C

**UNITS REPRESENTED IN THE THREE MILITARY GROUPS
IN THE STUDY**

Table C1: Units of Experimental Group (EG), Control Group 1 (CG1) and Control Group 2 (CG2) respondents at Stage 1 of study (“pre-deployment”).

	Number (percentage) of respondents		
	EG	CG1	CG2
2/1 RNZIR	87 (46.0)	3 (5.0)	22 (19.6)
QAMR	25 (13.2)	1 (1.7)	-
3 Tpt Sqn	9 (4.8)	-	2 (1.8)
3 Fd Wksp	9 (4.8)	1 (1.7)	1 (0.9)
3 Fd Sqn	6 (3.2)	1 (1.7)	2 (1.8)
163 Bty	5 (2.6)	-	4 (3.6)
2 Engr Regt	5 (2.6)	-	4 (3.6)
161 Bty	4 (2.1)	13 (21.7)	6 (5.4)
16 Fd Regt	4 (2.1)	2 (3.3)	3 (2.7)
HMNZS	-	9 (15.0)	-
Endeavour			
1 RNZIR	3 (1.6)	6 (10.0)	-
4 Log Regt	-	4 (6.7)	3 (2.7)
5 BLG	1 (0.5)	-	10 (8.9)
TTS/ALC	-	-	6 (5.4)
2 Fd Wksp	3 (1.6)	-	5 (4.5)
2 Sig Sqn	-	-	5 (4.5)
TAD	1 (0.5)	2 (3.3)	4 (3.6)
Other	27 (14.0)	18 (30.0)	35 (31.3)

APPENDIX D

SAMPLE BIAS

As Table 3-1 shows, there was a significant drop in the numbers of respondents at each stage of the study for each of the four groups. Interestingly, it seems that the Experimental Group (EG) was the most badly effected even though they were the focus of interest for the study. Control Group respondents were more likely to persevere with the study, with Control Group 3 (CG3) respondents being most likely to complete all questionnaires.

Before any further analyses, it was necessary to check that those respondents who “dropped out” at some stage of the study did not differ from those who continued with the study. Not only would this negate the possibility of sample bias (it may have been, for example, that those personnel who did not complete a questionnaire were those who had higher levels of psychological distress) but it would also provide justification for using data from all subjects, not just for those who completed all questionnaires. This was desirable in order to keep sample sizes as high as possible.

The method employed by MacDonald et al (1996) was used to test this, whereby comparisons were made between respondents who dropped out at a particular stage against all those who completed questionnaires, on all major variables at the previous stage of the study. For example, respondents who completed questionnaires at follow-up (Stage 4) were compared with those who did not complete follow-up questionnaires on all major measures at post-deployment (Stage 3). T-tests were used for these comparisons, not only for the EG, but also for the three control groups.

The t-tests revealed no significant differences between those dropping out and those completing questionnaires at any stage or within either the EG or the three control groups, on any of the major measures. That is, on all “total” scores from each of the scales. (In fact even when including all factor scores in the analysis, only 4 of the 143 tests conducted were significant at the .05 level, and there was no discernible pattern among the four tests). It was therefore valid to include all respondents in further

analyses. In some analyses, however, only those personnel who completed all questionnaires of interest were included, in order to provide a clearer picture of the changes throughout the deployment.

APPENDIX E

**DESCRIPTIVE STATISTICS FOR VARIABLES REPRESENTED IN
GRAPHS AND ANALYSES IN SECTION 3.3**

Table E-1: Descriptive Statistics (mean, standard deviation, n) for Experimental Group (EG) Mental Health Outcome Variables

Variable	Stage 2 (pre-depl)	Stage 2 (mid-depl)	Stage 3 (post-depl)	Stage 4 (follow-up)
Daily Hassles	18.397 15.197 184	18.153 12.339 124	18.274 14.001 95	22.97 19.222 67
Deployment Hassles (T Score)	50.000 10.000 188	50.000 10.000 127	50.000 10.000 96	
Psychological Well-Being	65.844 12.915 179	66.120 14.165 117	66.560 13.522 91	71.328 14.031 67
Psychological Distress	55.872 19.614 188	52.937 20.233 126	51.032 18.657 93	47.931 19.871 58
Total Distress	28.618 7.040 191	27.937 5.958 126	27.464 5.470 97	28.209 7.136 67
PTSD (T Score)	50.000 10.000 187		50.000 10.000 93	50.000 10.000 67
State Anxiety	31.199 9.192 186	30.387 8.128 124	28.181 7.424 94	30.702 11.865 67
Depression			3.178 3.469 90	4.418 5.780 67

Table E-2: Descriptive Statistics (mean, standard deviation, n) for Control Group 1 (CG1) Mental Health Outcome Variables

Variable	Stage 2 (pre-depl)	Stage 2 (mid-depl)	Stage 3 (post-depl)	Stage 4 (follow-up)
Daily Hassles	16.968 12.720 62		17.053 12.980 38	20.353 15.077 34
Deployment Hassles (T Score)	50.000 10.000 61		50.000 10.000 38	
Psychological Well-Being	70.783 12.415 60		71.316 11.673 38	72.588 12.422 34
Psychological Distress	47.836 19.314 61		45.447 15.334 38	47.833 17.948 30
Total Distress	26.952 5.614 62		27.531 5.054 32	26.882 5.704 34
PTSD (T Score)	50.000 10.000 62		50.000 10.000 38	50.000 10.000 34
State Anxiety	27.516 8.785 62		26.649 7.266 37	26.618 7.041 34
Depression			2.947 3.639 38	2.697 4.538 33

Table E-3: Descriptive Statistics (mean, standard deviation, n) for Control Group 2 (CG2) Mental Health Outcome Variables

Variable	Stage 2 (pre-depl)	Stage 2 (mid-depl)	Stage 3 (post-depl)	Stage 4 (follow-up)
Daily Hassles	23.438		20.151	22.493
	16.035		15.873	18.210
	112		73	69
Psychological Well-Being	66.055		68.897	71.612
	15.278		15.128	14.030
	109		69	67
Psychological Distress	58.703		53.9000	51.758
	23.599		22.522	22.156
	111		70	66
Total Distress	31.309		29.521	28.333
	8.110		7.034	6.963
	110		73	69
PTSD (T Score)	50.000		50.000	50.000
	10.000		10.000	10.000
	111		73	69
State Anxiety	29.613		28.611	29.667
	9.596		10.228	9.553
	111		72	69
Depression			4.055	4.000
			5.148	5.747
			73	67

Table E-4: Descriptive Statistics (mean, standard deviation, n) for Control Group 3 (CG3) Mental Health Outcome Variables

Variable	Stage 2 (pre-depl)	Stage 2 (mid-depl)	Stage 3 (post-depl)	Stage 4 (follow-up)
Daily Hassles	27.696		27.582	26.280
	14.829		16.142	15.740
	92		79	75
Psychological Well-Being	66.544		67.833	66.427
	13.008		12.816	14.753
	92		78	75
Psychological Distress	58.784		57.797	56.671
	20.729		21.301	19.697
	93		74	67
Total Distress	32.681		32.139	31.760
	7.144		7.961	7.421
	94		79	75
PTSD (T Score)	50.000		50.000	50.000
	10.000		10.000	10.000
	94		77	75
State Anxiety	30.915		31.633	31.587
	8.896		10.641	9.957
	94		79	75
Depression			6.077	5.662
			5.768	5.562
			78	74

APPENDIX F**BIVARIATE CORRELATION COEFFICIENTS FOR VARIABLES
INCLUDED IN MULTIPLE REGRESSION ANALYSES****Table F-1:** Bivariate Pearson Correlation Coefficients for Multiple Regression Analyses described in Section 3.3.4.1 (Predicting PTSD Symptoms)

Variable	PTSD
<i>Demographic Variables</i>	
Marital status	.031
Ethnic group	-.006
Highest educational qualification	-.367**
Income	-.260*
Age	-.277*
<i>Military Variables</i>	
Rank	-.349*
Corps	-.581***
No of other operational deployments	-.234
No of other deployments	-.163
Length of service	-.545**
<i>Stage 1 Deployment Questions</i>	
Amount of notice	.147
Confidence in pre-deployment training	-.422**
How much do you want to go	.009
How worried/anxious	-.235*
How well do you think you will cope	-.045
<i>Stage 2 Deployment Questions</i>	
How stressful/difficult	-.399**
Enjoying deployment	-.052
Difficulty keeping morale up	-.170
Coping with deployment	-.248*
Worried about family	-.100
<i>Stage 3 Deployment Questions</i>	
Mission successful	-.250*
How much did you enjoy deployment	-.222
Coped with deployment	-.173
How stressful/difficult	-.289*
IT leave	.259*
OT leave	.018
<i>Stage 4 Deployment Questions</i>	
Settled back into NZ life	-.559***
Settled back into job	-.172
Satisfied with support from Army since deployment	-.085
Satisfied with family support during deployment	-.269*
Satisfied with family support since deployment	-.302**
No of visits to health professional	.144

*p<.05

**p<.01

***p<.001

Table F-2: Bivariate Pearson Correlation Coefficients for Multiple Regression Analyses described in Section 3.3.4.2 (Predicting Depression Symptoms)

Variable	Depression
<i>Demographic Variables</i>	
Marital status	-.187
Ethnic group	.064
Highest educational qualification	-.393**
Income	-.289*
Age	-.324**
<i>Military Variables</i>	
Rank	-.413*
Corps	-.422*
No of other operational deployments	-.130
Time on other deployments	-.311
<i>Stage 1 Deployment Questions</i>	
Amount of notice	.356**
Confidence in pre-deployment training	-.035
How much do you want to go	.128
How worried/anxious	-.194
How well do you think you will cope	.043
<i>Stage 2 Deployment Questions</i>	
How stressful/difficult	-.447***
Enjoying deployment	-.160
Difficulty keeping morale up	-.120
Coping with deployment	-.221
Worried about family	-.023
<i>Stage 3 Deployment Questions</i>	
Mission successful	.057
How much did you enjoy deployment	-.031
Coped with deployment	-.063
How stressful/difficult	-.085
IT leave	.142
OT leave	.365**
<i>Stage 4 Deployment Questions</i>	
Settled back into NZ life	-.578***
Settled back into job	-.342**
Satisfied with support from Army since deployment	.022
Satisfied with family support during deployment	-.049
Satisfied with family support since deployment	-.136
No of visits to health professional	.145
*p<.05	**p<.01
	***p<.001

Table F-3: Bivariate Pearson Correlation Coefficients for Multiple Regression Analyses described in Section 3.5.3 (PES factors as independent variables and PTSD symptoms and depression at follow-up as dependent variables)

PES Factor	PTSD	Depression
Factor 1. <i>Safety</i>	.006	-.077
Factor 2. <i>Witnessing unpleasant events</i>	.127	.123
Factor 3. <i>Local people</i>	-.093	-.038
Factor 4. <i>Death or serious injury</i>	.564***	.248
Factor 5. <i>Traditional combat</i>	.225	.020
Factor 6. <i>Dangerous incidents experienced by self or colleagues</i>	-.024	-.178
Factor 7. <i>Personal situation</i>	.139	.087
*p<.05	**p<.01	***p<.001

Table F-4: Bivariate Pearson Correlation Coefficients for Multiple Regression Analyses described in Sections 3.6.2 and 3.6.3 (Predicting PTSD Symptoms and Predicting Depression)

Predictor Variable	PTSD	Depression
"Pre and during deployment hassles"	.195	.100
"Post-deployment hassles"	.678***	.489**
PES Factor "witnessing unpleasant events"	-.001	.123
PES Factor "death or serious injury"	.656***	.248
*p<.05	**p<.01	***p<.001

APPENDIX G

**DESCRIPTIVE STATISTICS FOR VARIABLES REPRESENTED IN
FACTOR ANALYSES**

Table G-1: Descriptive Statistics for Factor Analysis of Peacekeeping Exposure Scale (PES)
(Section 3.5.1)

PES Item	Mean	SD	N
1. Experience local unrest	1.84	1.191	93
2. Fear for life or personal safety	1.25	1.028	93
3. Witness a disturbing scene or incident	1.13	1.154	93
4. See people suffering severe illness/ starvation /mutilation	1.16	1.200	93
5. Bothered by incidents involving children	1.84	1.439	93
6. Bothered by quality of life of the local people	1.94	1.405	93
7. Bothered by feeling responsible for the safety of other people	1.35	1.515	93
8. Witness someone being killed or seriously injured	.45	.915	93
9. Other UNPROFOR personnel killed or seriously injured	.61	1.216	93
10. Handle bodies	.08	.397	93
11. Treat casualties	.23	.739	93
12. In an area receiving sniper or small arms fire	1.27	1.287	93
13. Exposed to NBC threat	.14	.523	93
16. Encounter artillery or mortar fire	1.02	1.302	93
17. Encounter mines, bombs or booby traps	1.29	1.273	93
18. Ambushed, detained or threatened with a weapon	.53	.996	93
19. Feel that your freedom was restricted	2.54	1.585	93
20. Bothered by your living conditions	1.33	1.245	93

Table G-2: Descriptive Statistics for Factor Analysis of Hassles and Deployment Hassles Severity Scores (Section 3.6.2)

Severity Score	Mean	SD	N
Daily Hassles at pre-deployment	20.025	16.009	40
Deployment Hassles at pre-deployment	13.550	9.690	40
Daily Hassles at mid-deployment	19.500	12.645	40
Deployment Hassles at mid-deployment	22.600	14.153	40
Daily Hassles at post-deployment	17.850	12.129	40
Deployment Hassles at post-deployment	14.825	10.215	40
Daily Hassles at follow-up	21.300	14.383	40