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**The Impact of Trauma on Health and the
Moderating Effects of Social Support:
a Study With the New Zealand Police**

**A thesis presented in partial fulfilment
of the requirements for the degree
of Doctor of Philosophy in Psychology
at Massey University**

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ABSTRACT

Traumatic experiences are an inherent part of many aspects of police work and the effects of trauma on police officers are of increasing concern to the New Zealand Police. There is evidence that social support following trauma may directly influence the development of adverse post traumatic stress reactions. Posttraumatic stress disorder (PTSD) is a specific psychiatric outcome of traumatic stress with a diagnosis (*DSM-IV*, American Psychiatric Association, 1994), which includes the traumatic experience as well as a constellation of symptoms. There is also evidence that additional physical health symptoms are associated with PTSD. Several factors have been explored as variables that could intervene between the traumatic experience and the development of symptoms and there is a growing body of empirical evidence for social support as an important factor. Horowitz' (1986) theoretical model of PTSD aetiology suggests that social support is a moderator of the experience of trauma in the development of stress reactions. The form of the interaction predicted by this model is known in the social support literature as the 'buffering hypothesis'. The primary aims of the present study were to extend the current evidence for the preventive role of social support in PTSD. Using a theoretical approach, it focused on the specific aspects of support which could buffer the stress\PTSD relationship. The theoretical model of PTSD, and the existing evidence, suggest that perceived emotional support, and in particular the opportunities to talk about the traumatic experience, are the salutary aspects of social support following trauma. It was hypothesised that aspects of emotional support such as opportunities to talk about trauma would moderate the relationship between traumatic experiences and psychological and physical health outcomes. The study also aimed to examine the prevalence of PTSD and physical health symptoms, and their relationship to the traumatic experiences of police officers. To meet these aims and test the hypotheses, 527 police officers in one geographical region of New Zealand were surveyed by questionnaire. Initial results showed that the prevalence of PTSD symptoms in the New Zealand Police is similar to that of other groups in the community who have suffered traumatic experiences. The wide range of traumatic experiences that were affecting the health of police officers were most likely to have occurred while they

were at work. The results of regression analyses showed that the numbers of traumatic experiences were positively related to levels of posttraumatic stress disorder symptoms and physical health symptoms. The particular social support variables that moderated the effects of traumatic experiences on psychological and physical outcomes were: the ease of talking about trauma in the work place; the attitudes to expressing emotion; emotional support from peers; and emotional support from outside work. These results support the theoretical model of PTSD and social support that was tested in the study, and substantiate suggestions that, to buffer stress, the type of support must be specifically related to the needs elicited by the stressor. The results were further discussed in terms of the limitations of cross-sectional design, the measures used and suggestions for further research to confirm and extend the findings. The implications for police organisations were also discussed. These included the additive health effects of ongoing traumatic stress, the effects of other organisational stressors which must be taken into account, emotional support as an important factor intervening between traumatic experience and health outcomes, and the importance of support from peers and from family and friends which was highlighted in the present study.

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Chapter One

INTRODUCTION

1.1 Chapter Overview

This chapter introduces Posttraumatic Stress Disorder, the traumatic experience and the importance of these two concepts to police organisations. The problem of the effects of trauma on individual police officers is briefly outlined with examples from international research and the experience of the New Zealand Police in particular. These examples point to the need for the continuing investigation of measures that prevent the development of disorder following trauma and to the possible role of social support as an important part of any prevention programme. Following this rationale, the remainder of this chapter outlines the focus of the present study and the organisation of this thesis.

1.2 Traumatic Stress and the Police

The essential feature of Posttraumatic Stress Disorder (PTSD) is the development of a range of distressing psychological and physical symptoms following exposure to a traumatic experience (see Table 1). According to the current Diagnostic and Statistical Manual of Mental Disorders (*DSM-IV*, American Psychiatric Association, 1994) the traumatic experience, that is a central part of the diagnosis of the disorder, is an event that involves actual or threatened death or injury, or a threat to the physical integrity of oneself or others. In addition, the person's response to the event involves intense fear, helplessness or horror. An inherent part of much police work involves encounters and situations that could meet these criteria. The work may be personally dangerous, as in dealing with aggressive offenders, and there are also many potentially horrific duties related to the death of others, such as reporting a child's death or dealing with mutilated bodies. A survey of police in the United States (Sewell, 1983) showed that of 144 life events relating to police duties, those concerned with violence or threatened violence were rated as the most stressful.

Table 1.
Criteria for Diagnosis of Posttraumatic Stress Disorder (American Psychiatric Association, 1994)

-
- A. The person has been exposed to a traumatic event in which both of the following have been present:
 - 1. the person has experienced, witnessed, or been confronted with an event or events that involve actual or threatened death or serious injury, or a threat to the integrity of oneself or others
 - 2. the person's response involved intense fear, helplessness, or horror.

 - B. The traumatic event is persistently re-experienced in at least one of the following ways:
 - 1. recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions
 - 2. recurrent distressing dreams of the event
 - 3. acting or feeling as if the event were recurring
 - 4. intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.
 - 5. physiologic reactivity upon exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

 - C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by at least three of the following:
 - 1. efforts to avoid thoughts, feelings or conversations associated with the trauma
 - 2. efforts to avoid activities, places or people that arouse recollections of the trauma
 - 3. inability to recall an important aspect of the trauma
 - 4. markedly diminished interest or participation in significant activities
 - 5. feeling of detachment or estrangement from others
 - 6. restricted range of affect (e.g. unable to have loving feelings)
 - 7. sense of foreshortened future

 - D. Persistent symptoms of increased arousal (not present before the trauma) as indicated by at least two of the following:
 - 1. difficulty falling or staying asleep
 - 2. irritability or outbursts of anger
 - 3. difficulty concentrating
 - 4. hypervigilance
 - 5. exaggerated startle response

 - E. Duration of the disturbance is more than one month.

 - F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify if:

Acute: if duration of symptoms is less than 3 months
 Chronic: if duration of symptoms is 3 months or more

Specify if:

With delayed onset: if onset of symptoms is at least 6 months after the stressor

More recently, an Australian study (Coman, 1993) showed that the most traumatic events reported by police included infrequently occurring duties related to violent death, injury or the non-accidental death of a child or more frequent events such as facing possible physical injury or an unpredictable situation. Police share a range of occupational stressors with many other types of work (Anson & Bloom, 1988) but according to Kroes (1972) the line of duty /crisis situation is "truly inherent" to police work and automatically built in to policing so that it cannot be changed.

The effects of trauma are of increasing concern to New Zealand Police. A study of disengagements from 1985 to 1990 (Miller & Ford, 1991) shows that psychological factors were the predominant reason for exiting (69.2%). Forty three per-cent of the sample reported trauma as a factor in their applications to disengage and 16.8% were diagnosed by health professionals as exhibiting specific symptoms of post-traumatic reactions. These figures are comparable with those from the United States where it is estimated that 12 to 35% of police officers suffer PTSD with various levels of psychological disabilities. PTSD was ranked the fifth most common, overall referral problem presented to police psychologists (Mann & Neece, 1990). However, many people with PTSD symptoms do not seek treatment (McFarlane, 1988b) and in a study of police officers in the Netherlands, Gersons (1989) found that none of 37 who suffered PTSD symptoms had sought any form of treatment. These officers had complaints about performance from their superiors but neither the superiors nor the police officers themselves understood the relationship between their inadequate role functioning and the traumatic experience. This may be the situation in New Zealand where PTSD has been under-utilised as a diagnostic category and the disorder easily escapes detection (Long, Chamberlain & Vincent, 1992). PTSD has been diagnosed in many New Zealand police officers, and may be adversely affecting many more than are officially recognised at present. Traumatic experiences are an unavoidable part of much police work and therefore, preventive efforts are often focused on preventing the development of the disorder after the traumatic event.

The New Zealand Police Trauma Policy (New Zealand Police, 1992), recognises this situation and provides for the support of affected members by independent health professionals in most districts. The policy allows for voluntary referrals for a wide range of potential sources of trauma including: the use of deadly force, the death and injury of members on duty, disasters, terrorist incidents, policing civil disorder, special duties, bizarre and multiple crimes, exposure to AIDS and other infectious risks, internal investigations, dealing with sexual crimes and crimes against children. The policy recognises both major events and lesser events resulting in cumulative experiences, as potential traumatic stressors. In cases recognised as serious incidents mandatory debriefing is required. These include: the use of deadly force, accidental death of members on duty or of the public, injury or threat to life of members on duty, disaster victim identification or multiple deaths, and multiple or bizarre homicides. However, referral of individual members is usually at their own request (perhaps with the encouragement of supervisors) and as Jamieson's (1992) report on the health and trauma support service concludes: "... it is a fundamental reality that these are only as effective as the willingness of the staff to utilise such services." (p.22). There is evidence in the literature that suggests that police are less likely to seek help from clinicians or counsellors, or people external to the organisation (e.g. Coman, 1993; Graf, 1986) and this is a reflection of attitudes within the organisation that may counter the effectiveness of the trauma policies as a first stage preventive action (although they are an essential part of the whole support system). Furthermore the peer group and supervisors within the organisation are the most important sources of support (Graf, 1986; Greller, Parsons & Mitchell, 1992; McIntosh, 1991) and it is the nature of this support that may influence not only the utilisation of external services by individual officers but the development of the disorder itself.

1.3 Outline of the Present Study

The primary aim of the present research is to examine the relationship of social support to the development of traumatic stress symptoms in police officers. This research will contribute to the empirical evidence supporting a role for social support following traumatic experiences. It will also contribute to theories of post traumatic

stress reactions by examining social support within a model that combines theoretical perspectives from the PTSD and social support areas of inquiry. This model will be used in an attempt to specify more clearly the specific aspects of social support that contribute to better health outcomes following trauma. The secondary aim is an examination of the prevalence of traumatic experiences and traumatic stress symptoms in the New Zealand Police. The results of this part of the study will contribute to empirical understandings of stress related outcomes in police as an occupational group. It will also contribute to knowledge at a local level, as this information is not yet available for those who wish to develop and evaluate prevention programmes for the New Zealand Police. Traumatic stress symptoms will be studied primarily within the framework of PTSD as defined by *DSM-IV*, and secondly as other physical manifestations of stress.

The first part of this thesis is a review of the literature which explores possible avenues for the role of social support in the aetiology of PTSD. The main focus for this review is in the context of social support in organisations, and in particular, police organisations. The second chapter begins by examining existing theoretical models of the aetiology of PTSD. A model which can explain existing evidence to date for the importance of moderating factors, such as social support, was chosen as the framework for the current study. Chapter three outlines and compares conceptualisations of, and measurement issues related to, social support in organisations. To demonstrate the importance of social support in an aetiological model, Chapter four outlines the current empirical evidence for social support as an influential factor in the development of PTSD. This is followed, in Chapter five, by an outline of recent experimental work on the physical effects of the disclosure of traumatic experiences. The results support the clinical evidence for the importance of the verbal expression of the powerful emotions that are part of trauma, in the prevention of disorder. This body of research is also linked to evidence of physical and psychological morbidity that is associated with the symptoms of PTSD itself. The sixth chapter considers the evidence for, and problems of, the role of social support in police organisations. A line of enquiry is established that focuses upon the

content of communication, and in particular the opportunity to express emotion, as an important therapeutic aspect of social support following traumatic experiences. In the second part of the thesis, the objectives of the present study are outlined in Chapter seven which includes the background and rationale for the inclusion of the other independent variables in the study: trauma and a group of demographic variables. Two dependent variables are also considered: the constellation of psychological symptoms that contribute towards a diagnosis of PTSD, and a range of physical symptoms. Chapters eight and nine present the method and results of the present study, followed by a discussion of these results and conclusions in Chapter ten.

Chapter Two

THEORIES OF THE AETIOLOGY OF PTSD

2.1 Chapter Overview

This chapter introduces the notion of additional variables, apart from the traumatic experience itself, in PTSD aetiology. There are many theoretical frameworks that have been proposed to explain the development of PTSD following trauma. The most influential of these models are reviewed, according to their ability to explain the role of additional variables and the role of social support in particular.

2.2 Introduction

PTSD can develop in individuals after any traumatic event, but people exposed to trauma do not necessarily develop the disorder. Results of recent research suggest that an extraordinary stressor is necessary but not sufficient to explain the development of the disorder (Barret & Mizes, 1988; Frye & Stockton, 1982; Green & Berlin, 1987; Green, Lindy & Grace, 1985; McFarlane, 1988a; Norman, 1988; Sutker, Uddo-Crane & Allain, 1991). Therefore, other variables, that either predispose an individual to develop the disorder after a traumatic experience or affect the development of the disorder during or after the event, must be taken into account. Current models describing the aetiology of PTSD offer different levels of explication for the effects of other variables, apart from the traumatic experience itself, on the development of the disorder. These models may be seen as grouped into biological, psychological and psychosocial bases of explanation. Although there appears to be no overriding agreement regarding the most appropriate theoretical framework for understanding the disorder (Sutker, 1991), there is considerable overlap between the theories. Competing explanations are not necessarily mutually exclusive and there is a growing call for comprehensive biopsychosocial models that account for all the empirical evidence (e.g. Breslau & Davis, 1987b; Escobar, 1987; Silove, 1987).

Peterson, Prout and Schwarz (1991), in discussing their proposed 'ecosystemic' model, propose that an inclusive framework that takes account of the explanatory contributions of different approaches to different aspects of PTSD is more heuristic. In the following sections the influential theoretical approaches to PTSD aetiology will be briefly reviewed. More attention will be given to those models that provide the best explanation for the preventive role of social support in an inclusive psychosocial context.

2.3 Psychobiological Theories

Biologically based models focus on the neuronal and hormonal changes that have been observed in clinical observations of the effects of PTSD. Van der Kolk (1988; van der Kolk & Saporta, 1993) has proposed a biological model based on enduring biological alterations of the limbic system and neurotransmitter activity following psychological trauma. Kolb (1987) has developed a "neuropsychological hypothesis" that traumatic events cause the development, alteration or death of neuronal pathways and subsequent impairment of cortical control of aggressive impression and the sleep-dream cycle.

These models hold that PTSD is the result of an interaction between psychological and biological events, and this neurobiological conditioning framework is consistent with social learning theory (March, 1990) on which other psychological theories of PTSD are based. However, although these biologically based models provide explanations for symptoms such as the generalisation of anxiety and increased arousal, they do not account for evidence of a wide range of individual differences in response to the same trauma, the delayed development of symptoms in many cases, and other variables known to be significant in the development of PTSD such as, the extent and severity of the stressor and perceptions of social support (Jones & Barlow, 1990).

2.4 Cognitive Models

Kreitler and Kreitler (1988) see anxiety as the core element in the development of PTSD. Currently the weight of evidence on this aspect of the aetiology and nosology

of PTSD leans strongly towards viewing PTSD as an anxiety disorder (Davidson & Foa, 1991a, 1991b; March, 1990), and it is classified as such in *DSM-IV* (1994). This cognitive approach is based on the interaction of predisposing personality factors and anxiety as a signal of the breakdown of major attitudes and beliefs held by the individual. The model has heuristic value and generates useful research questions. However, as a framework for explaining the aetiology of PTSD, it is limited by a lack of detailed explication of causal processes and a failure to account for post trauma variables (such as social support) in the development of the disorder.

Jones and Barlow (1990) have proposed a model based on conceptualisations of the process and origins of anxiety and panic that also places PTSD within the anxiety disorders. Jones and Barlow (1990) describe the evidence linking PTSD with panic disorder in particular, and also show how PTSD is differentiated from other anxiety disorders by the nature of the alarm (re-experiencing) which is linked to the original traumatic stressor. This model has links with other models of PTSD aetiology, especially with those that feature information processing schemes. As well as pre-trauma characteristics and experiences of the individual and the differential severity of the stressor, the effects of social support are explained as a moderator between the traumatic experience and the possible development of the disorder. However the model provides no mechanism for this buffering effect.

A more detailed cognitive model has been proposed by Chemtob, Roitblat, Hamada, Carlson and Twentyman (1988), that is claimed to integrate previous psychodynamic, learning theory and information processing approaches. It is described primarily as an information processing model and is based on the cognitive schema of a "fear structure" that may have been appropriate to survival at the time of the trauma but persists when no longer necessary. The model attempts to explain the re-experiencing phenomenon, an important symptom of PTSD, and the alternation of sufferers between intrusive and avoidant states. However the empirical evidence that supports the model is based on data collected from combat veterans and no attempt has been made to apply the explanations more widely. In addition there is no explanation for

individual variations in the development of the disorder, nor does the model include variables of known significance such as control or social support (Jones & Barlow, 1990).

Foa, Steketee and Rothbaum (1989) have also described an information processing model based on fear structures. This description does include other sources of traumatic stress and the authors discuss types and numbers of trauma as a variable. Foa and colleagues also incorporate meaning concepts and the variables of predictability and controllability as central to the development of the fear structure. However, they do not describe how these variables activate the fear network or in what way PTSD is distinguished from other anxiety disorders. As in other models, important symptoms, such as emotional numbing or delayed reactivity, and other variables, such as social support, are not discussed (Jones & Barlow, 1990).

2.5 Behavioural Models

Keane, Zimmering and Caddell (1985) offer a learning theory model of PTSD, that more recently has links with the other cognitive models through a recognition of the importance of information processing factors (Litz & Keane, 1989). Individuals who experience traumatic events can be conditioned to experience fear and anxiety in response to previously neutral stimuli (with an emphasis on cognitive cues) that are initially associated with the experience. Through two principles: higher order conditioning and stimulus generalisation, the number of cues evoking the aversive memory and the conditioned physical reactions can be greatly increased, making avoidance increasingly difficult. The model incorporates explanations for the maintenance through avoidance, rather than extinction, of the anxiety reactions. It also includes levels of social support as an important variable in the development of the disorder. Keane and colleagues do discuss other variables such as the predictability and controllability of events, biochemical changes, and pre-trauma variables, but these variables are not explained by the model which is intrinsically descriptive rather than aetiologic (March, 1990).

2.6 Psychodynamic Models

The theoretical approaches described so far have either not included consideration of social support as a post trauma variable in the aetiology of PTSD, or have failed to provide mechanisms that would explain a moderating role in the development of the disorder. Horowitz' (1986, 1993) theory is an extension of psychoanalytic concepts of trauma with a major emphasis on contemporary theories of information processing and emotion. The original diagnostic criteria for PTSD which form the basis for those in *DSM-IV* (1994) were strongly influenced by this theory (Peterson et al., 1991). Consequently, although Horowitz does not agree with the categorisation of PTSD as an anxiety disorder per se, the theory offers explanations for most of the symptoms of the disorder and is able to explain other characteristics by including complementary models such as biological theories (Horowitz, 1993). It also has strong links with the cognitively based theories described above through the use of notions of information processing and cognitive schemas.

Horowitz proposes a theory of phases of response to a traumatic experience and these are summarised in Figure 1. Each phase includes the normal and the pathological response to, outcry, denial, intrusion, working through and completion. No single individual will necessarily fit this prototype and the phases are not necessarily discrete in time. This theoretical process is a generalisation of observed experience, informed by information processing theory, in which cognitive schemas, with which the person constructs assumptions and understandings of self and world, are overwhelmed by the powerful emotional component of the new information that is the traumatic experience. Since the person cannot process this novel emotional information immediately, it is modulated into tolerable doses and often pushed out of mind, resulting in emotional numbing. Hence the memories remain in an "active" form and will intrude unbidden into consciousness, resulting in the characteristic intrusion phase accompanied by hypervigilance and inappropriate startle reactions to everyday events. The task for the victim of trauma is completion by working through the process, accepting the reality of what has happened and including the new awareness in revised schemas of the self and the world.

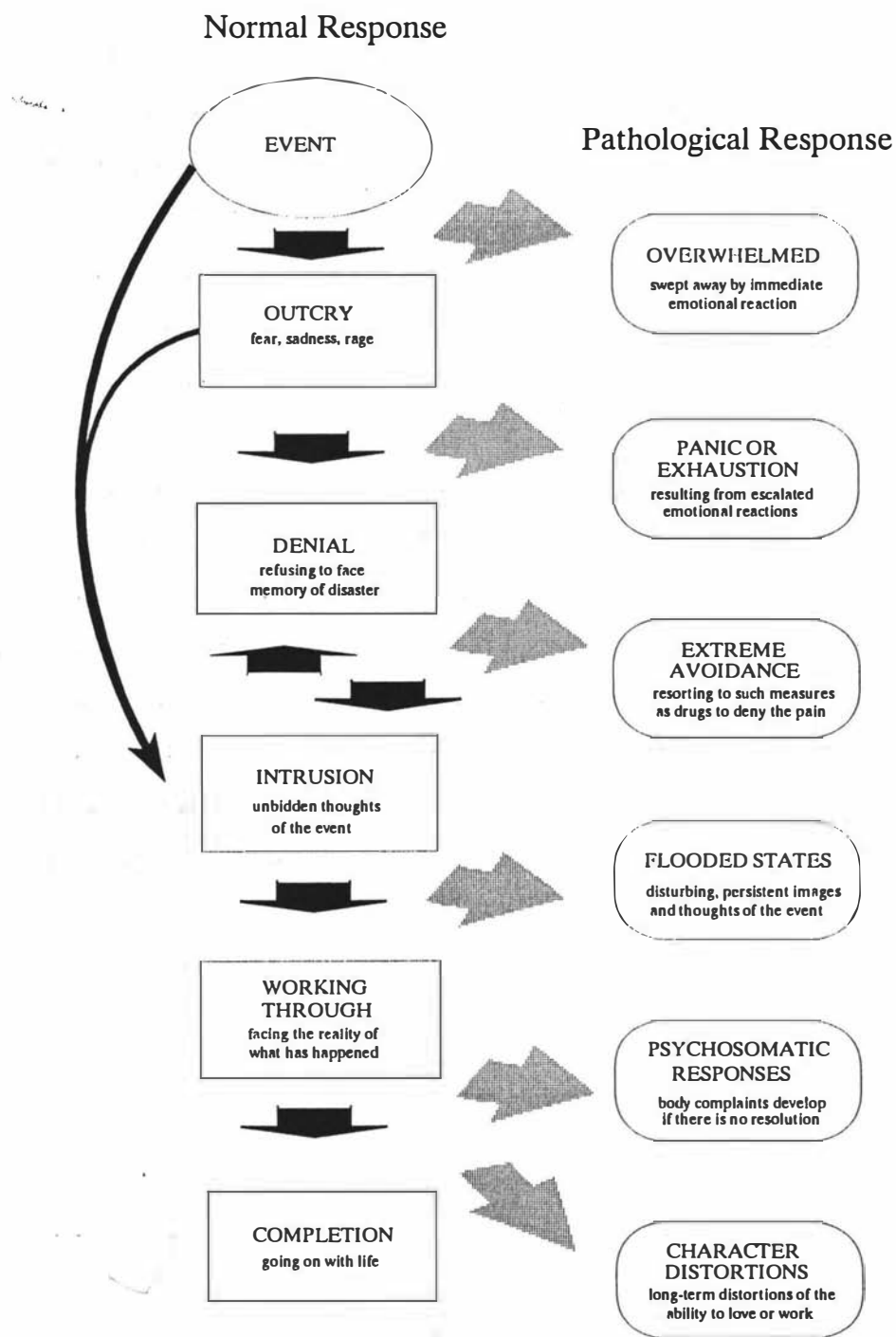


Figure 1. Normal and pathological phases of poststress response. Adapted from "Stress-response syndromes: A review of posttraumatic stress and adjustment disorders", by M. J. Horowitz, 1993. In J. P. Wilson & B. Raphael (Eds.), *International handbook of traumatic stress syndromes*. New York: Plenum Press.

Horowitz often discusses the need for social support but does not specifically include this and other variables that moderate the relationship between the trauma and the disorder. However a major strength of the theory is that it can account for these variables and therefore provides a sound basis for the development of biopsychosocial models. An important aspect in this regard is that, as Horowitz stresses, the post-trauma stages of response are the normal emotional and ideational processing of stressful events and the pathological failure to complete the process may occur at any or several of the stages. These differences in outcome may be caused by a wide range of individual and environmental differences, such as personality, cognitive style, coping mechanisms and culture, which will affect schematization (Horowitz, 1993). The importance of social support in particular is accounted for by the "working through" phase which includes forming new schemas or revising schemas. This phase "...is characterised by progress on thinking and feeling, communicating and relating to others, that is, on the themes that have been so distressful during the intrusive phase" (p. 53). It is possible that the opportunity to talk about the trauma in a supportive environment, is an essential aspect of the processing of the new traumatic information which has "shattered " existing schemas (Janoff-Bulman, 1992). Talking with others could be a necessary aspect of the resolution of trauma through the development of revised self schemas.

Horowitz' (1993) model is a comprehensive psychological theory that has strong cognitive and information processing components which allow for linking to other cognitive, behavioural and biological frameworks. While Horowitz' model has been particularly influential and unsurpassed in the context of individual psychodynamic explanations (Peterson et al., 1991), it also forms a sound basis for psychosocial frameworks that seek to explain different reactions to the same trauma and why some will develop the disorder while others do not.

2.7 Biopsychosocial Frameworks

Recent overviews of the field have pointed to the empirical evidence for a comprehensive array of individual and environmental factors influencing the disorder

and suggest that frameworks guiding research take account of this person/event interaction (e.g. Keane, 1989; Sutker, 1991). Many writers suggest that PTSD is best conceptualised within a biopsychosocial framework to incorporate all the possible mechanisms and interactions through which a noxious agent acts upon a vulnerable organism to produce the disorder (e.g. Breslau & Davis, 1987b; Escobar, 1987; Foy, Carroll & Donahoe, 1987; Schwartz, 1990; Silove, 1987). Shalev, Galai and Eth (1993) propose a multi-layered model in which neuro-biological processes, conditioned responses, networks of meaning and existential schema contribute to the symptoms of the disorder at different levels of functioning.

Green, Wilson and Lindy (1985) have proposed a detailed multi-layered framework which is built on Horowitz' (1985) information processing model. This model, based on clinical experience and supported by empirical evidence, (Green et al, 1985; Peterson et al.,1991) shows specifically how the many layers of variables may contribute to the processing of a traumatic event so that every person who is affected by the same event could have a different outcome. The variables involved in the process according to this model include: the experience itself which may vary along several dimensions; the individual's characteristics including personality, coping behaviour and meaning; posttraumatic cognitive processing; and the recovery environment including social support and additional stressors. These individual and environmental variables are seen to interact with the severity of the stressor to either help or hinder the processing of the trauma as outlined in Horowitz' theory.

Peterson et al. (1991) have extended the Green et al. (1985) model by emphasising the person's cognitive appraisal of the event and the meanings attributed to it in terms of pre-event cognitive schemas of self, others and the world. In addition, this model acknowledges the influence of response conditioning and emphasises the response of the social environment (such as family, peers, or society) to the event as an important aspect of the experience. These aspects of the integrated model provide a foundation for the inclusion of social support as an important variable in the aetiology of the disorder. Both Green et al. (1985) and Peterson et al. (1991) conceptualise social

support and cognitive appraisal as separate aspects of the model. Cognitive appraisal and attributions of meaning are seen as individual characteristics, that are divided from the social. However, an integration of these two aspects provides one explanation for the importance of social support. The members of an individual's social support system contribute to the development of cognitive schemas which include assumptions about self, others and the world. When these assumptions are traumatically altered, then the same social group will be an important contributor to the process of incorporating the new information into new coherent schemas. Thus, the role of other people at each level of an individual's social world, within an information processing theory, provides a basis for predictions regarding the nature of that support.

A theory of information processing, as proposed by Horowitz (1985; 1993) and developed to include a range of integrated variables by Green et al. (1985) and Peterson et al. (1991), provides the most meaningful basis for explanations of the role of social support in the prevention of disorder following a traumatic experience. According to the Horowitz (1993) model, the traumatic experience is followed by stages of cognitive processing which result in a positive or pathological (PTSD) resolution. To focus on the variable of interest here, social support is seen as a moderator of the effects of trauma, which interacts with post-traumatic cognitive processing resulting in different levels of PTSD symptoms (see Figure 2). Social support is a very broad construct and the following chapter will review theories of social support for work related stress, in order to establish which are the components of support that are most likely to fit the PTSD model and accordingly affect the process of recovery from trauma.

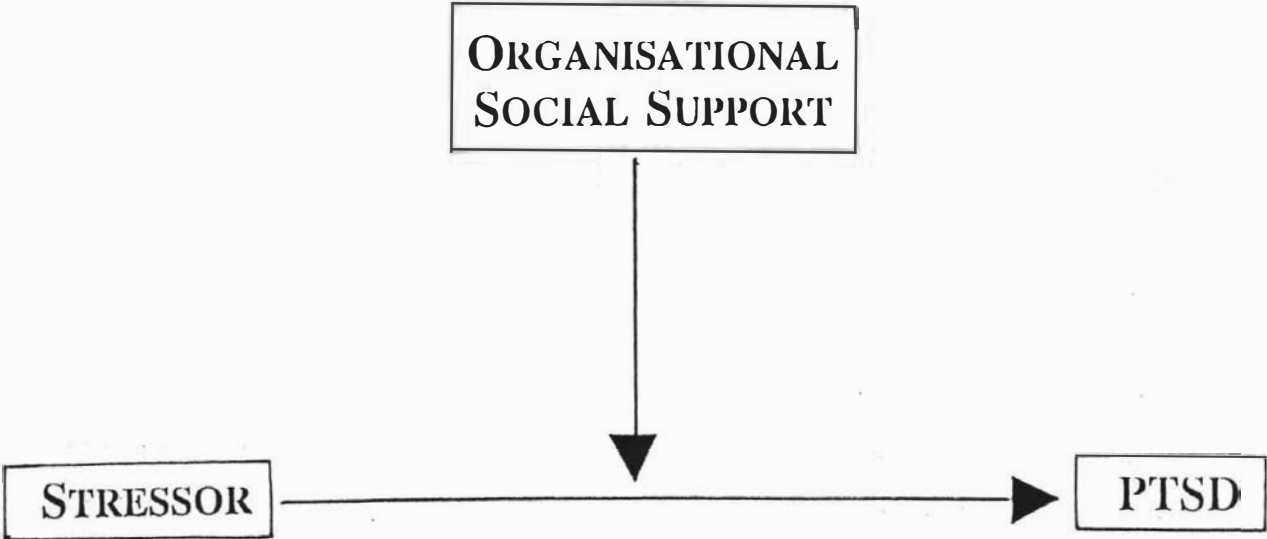


Figure 2. A simplified model of the development of work related PTSD showing the interaction between the traumatic stressor and social support.

Chapter Three

SOCIAL SUPPORT FOR WORK RELATED STRESS

3.1 Chapter Overview

As social support is a very broad construct with many dimensions and aspects, this chapter is divided into three main sections. The first section (3.2) examines the concept of social support, and in particular social support at work. It begins with a broad overview and concludes with brief descriptions of the important aspects of approaches to social support that must be considered. Each of these aspects is then discussed in turn. A rationale is developed for the use of each particular approach that would be best suited to the study of social support as a moderator of traumatic experiences at work. The second section (3.3) introduces the buffering model of social support and the links between this model of social support and the model of PTSD aetiology that has been proposed in Chapter two. The model of PTSD suggests that social support interacts with trauma and the buffering model spells out the form of this interaction. The aspects of the buffering model, and issues that have arisen in investigating this model, that are relevant to the approach to social support in the present study are discussed. Following directly from this discussion, the third section (3.4) considers three approaches to the measurement of social support that could be important. These approaches are drawn from investigations of the buffering hypothesis in occupational stress, from the PTSD literature, and from Horowitz' (1993) theory.

3.2 Conceptualisations of Social Support

Over the last three decades there has been an increasing interest and corresponding growth in the number of studies (and major reviews e.g. Cohen & Wills, 1985; Cutrona & Russell, 1990; House, 1981) investigating the role of social support as a

mediator or moderator of the relationships between stress and a variety of health outcomes. According to Ganster, Fusilier and Mayes (1986) it is the primary social factor hypothesised to mitigate strains in the work place. A recent summarising definition describes social support as "...resources (actual or perceived by a focal person) available from one or more others to assist the focal person in the management of stress experiences and to increase the experience of well-being." (McIntosh, 1991 p. 202). Many other, often more detailed conceptual definitions have been offered (e.g. Barrera & Ainlay, 1983; Caplan, Cobb, French, Van Harrison & Pinneau, 1975; Cohen & Wills, 1985; House, 1981).

Although the different definitions often disagree about which aspects are most important, they all have in common a recognition that there are many dimensions to the rather general notion of social support. Two dimensions which have been consistently identified are the source of social support (e.g. work or non-work) and the type of social support (e.g. instrumental or emotional) and the resources that constitute social support can be conceptualised as a combination of aspects of these two dimensions (McIntosh, 1991). In defining and measuring social support, other issues, apart from the dimensions of the construct itself, must be taken into account. Important aspects that have been identified are the differences between subjective and objective views of social support (Wilcox & Vernberg, 1985), and differences, such as gender, between people who are receiving the support (Cohen & Wills, 1985).

To identify the approaches to conceptualising organisational social support that best fit the model of PTSD (which, unlike much social support research, has a very specific stressor and outcome), this review will summarise evidence for the importance of the main aspects of social support that are considered in the literature. First, evidence for the value of the use of a subjective approach to the *perceptions* of social support will be presented. Second, the *functions* of perceived social support that may be relevant to traumatic stress will be described. Third, the *sources* of social support that may be important and fourth, the differences in *support needs* of different groups are considered. The final part of this first section considers the *properties* of

social support as a useful framework for structuring the potentially confusing multiplicity of the aspects of social support.

3.2.1 Perceptions of social support

Wilcox and Vernberg (1985) describe the difference between researchers who place weight on the actual nature, number or deficits of social transactions and those who define social support in cognitive terms, viewing the cognitive appraisal process as the major means by which social support influences stress and coping. This latter approach focuses on what has been termed subjective or perceived social support, and is closer to the cognitive appraisal processes of the PTSD model. Barrera and Ainlay (1983) asserts that the concept of perceived social support fits the cognitive models of stress and coping processes that emphasise the appraisal of threat and potential coping resources. These measures attempt to capture individual's perceptions that social support is available if needed and whether such support is adequate or helpful. There is also empirical support for this approach. Wilcox (1981) reports findings showing that the amount of variance in psychological distress accounted for was much greater when the social support measure used tapped the quality of social support rather than the quantity of supportive relationships. Cohen and Hoberman (1983) also found that measures of perceived availability of social support protects one from the pathogenic effects of high levels of life stress, whereas measures of past social support failed to find a moderating effect and they cite past studies that support this finding. A study by Jayaratne, Himle and Chess (1988) further indicated that social support is more likely to be used if the work environment is perceived to be supportive. Sarason, Sarason and Pierce (1990) cite more evidence for the highly consistent finding that the perception of social support is most closely related to health outcomes, and describe how the current emphasis on the subjective view of social support fits well with early conceptualisations of social support and with the cognitive appraisal approach to stress. In fact the majority of current measures could fit under a perceived social support category, although they differ in many more specifics.

3.2.2 Types of functional social support

Cohen, Mermelstein, Kamarck, & Hoberman (1985) describe two categories of social support measures: structural measures of support which assess the existence of relationships; and functional measures which use people's perceptions to assess the extent to which the relationships provide particular functions. Researchers have identified a variety of these perceived functions of social support, and they are often labelled with a confusing array of descriptors. However there is some consistency in the identification of functions which are best explained by two major theorists in the field.

First, House (1981) describes four types of supportive functions derived from varying conceptions in the literature: *emotional support*, providing empathy, caring, love and trust; *instrumental support*, involving behaviours that directly help a person in need; *informational support*, or providing information to help people cope with problems and *appraisal support* or giving information that people can use to evaluate themselves. House proposes that theoretically and empirically, emotional social support seems to be the most important and Wilcox (1981) and LaRocco, House and French (1980) support this view with further evidence of emotional social support as a key component.

Second, Cohen and Wills in a major review (1985), describe the use of alternative labels for, emotional support, (e.g. esteem, expressive, or close support) and for instrumental support (e.g. aid, material, or tangible support). They combine the appraisal with the informational support category and add social companionship (or belongingness) as a fourth category which is measured by the studies they review. They note that in practice there is often appreciable intercorrelation between the measures of different functional support dimensions and that even theoretically the categories are not independent. For example, offering instrumental support also has psychological effects such as showing that the recipient is cared for or esteemed. Cohen and Wills conclude that the emotional and informational support functions have been consistently successful in showing evidence of a moderating effect between

stress and well being.

In studies resulting from the data set of Caplan et al. (1975; e.g. LaRocco et al., 1980), tangible (instrumental) and emotional support were so highly correlated that the two types of social support measures were combined into a single index. In two studies of police and nurses, using similar measures of social support to the Caplan et al. study, emotional and tangible support correlated very highly with each other (Beehr, 1985). Beehr suggests that there is not enough evidence to show that one type of support is more important than the other. Buunk and Verhoeven (1991), in a more fine grained analysis of the social interactions of police officers, found that emotional, informational and appraisal support were highly related in an intimate support dimension which was independent of companionship and instrumental support. Because of the differing instruments used in these types of studies it is difficult to make definitive comparisons. However, as House (1981) and others originally pointed out, it is likely that emotional support is not independent of other categories, as an intuitive understanding of the word "support" and the empirical evidence so far suggests.

As a moderating variable in the model of PTSD aetiology, emotional support may be the most important type. Stretch (1985) found that emotional social support for Vietnam veterans significantly explained the same amount of variance in PTSD symptoms as the level of combat experience. Keane and Scott et al. (in another 1985 study of veterans) report that decrements in social support related to PTSD, were more evident for those dimensions of social support related to emotional support. The empirical evidence for the importance of perceived emotional social support, in relation to PTSD outcomes, will be examined in more detail in Chapter four.

3.2.3 Sources of social support

Three main sources of support in the face of stress at work have been described: supervisors, co-workers and non-work sources such as family and friends (Caplan et al., 1975). It has been suggested that people at work are the most important in

buffering the impact of stress on health, especially on affective and psychological effects (Beehr, 1985; House, 1981). This was borne out by Ganster et al.'s (1986) findings that, of the three sources of social support, those sources from the workplace, especially the supervisor, were the most important in affecting strains. Other work has also demonstrated the importance of support from the supervisor. Greller, Parsons and Mitchell (1992) found that social support from the supervisor was the only factor moderating the effects of occupational stressors in a police organisation. Another study measuring only supervisor support (Kirmeyer & Dougherty, 1988) found significant moderating effects of supervisor support on tension, anxiety and coping in a sample of police radio dispatchers. LaRocco et al. (1980) noted that although other work reported the importance of supervisor support, their results suggested that co-worker support was more consequential for individual psychological well-being. Dunning (1994) also cites evidence for the importance of both supervisor and peer support, and emphasises the critical role of social support in the work place, particularly when the source of stress is related to the job. Different sources of social support may also have different effects: a study of the actual communications of police radio dispatchers (Kirmeyer & Lin, 1987) showed that communication with superiors about work was perceived as supportive if initiated by the subordinate, whereas more frequent conversations with peers about work were associated with lower perceptions of social support.

The conception of three main and separate sources of social support has been well accepted and supported in the literature. The evidence for the importance of any particular source is mixed and the results of the investigations have often depended upon the situation and interests of the investigator. LaRocco et al. (1980) surveyed a wider range of occupations (23) and the results were analysed by House (1981) for the effects of the source of social support. He concluded that "...all people can benefit from social support in relation to their particular occupational stresses, but who can give a person the most effective support depends on the kind of work he or she does and the kind of stresses it imposes" (p.83).

3.2.4 Individual and group differences in social support needs

There have been suggestions that people of different personality type (Fusilier, Ganster & Mayes, 1987), social class (Cohen & Wills, 1985) or level of education (Ganster et al., 1986) have different social support needs or ways of using support elicited by the same stressor. The variable that has received the most attention in this context is gender and there is evidence that social support functions that are effective buffers against stress for women may not be for men and vice versa (Cohen & Wills, 1985). For example, Greller et al (1992) cite evidence that the work stress - burnout relation was moderated by social support from the work environment for men and by non-work sources of social support for women. Ogus (1990) cites an example in which supervisor support was effective in dealing with the effects of stress for women only. She suggests that women may use family and work support more effectively than men because asking for help is traditionally more acceptable for women; they are more likely than men to use emotional expression as a way of coping with stress. Hirsch, Engel-Levy, DuBois and Hardesty (1990) add that women are also vulnerable to inter-role conflict between family and work and traditionally carry responsibility in both areas. Overall there has not been much attention paid to such group differences although the evidence so far indicates that variables appropriate to the situation under study should be examined. In a police organisation these are likely to be gender, ethnic group and age and police related variables such as rank. These variables are discussed in more detail in Chapter seven.

3.2.5 Properties of social support

McIntosh (1991) suggests that the confusion about the measurement of social support may be caused by the confounding of the dimensions of support, i.e. source and type of function, with the properties of those dimensions. She proposes that aspects that have been measured as extra dimensions of social support, such as the number of providers of the resource, the amount of the resource available and the perceived adequacy of the resource, are better conceptualised as properties of social support. According to McIntosh these should be measured as aspects of each social resource that is defined by a combination of source and type, e.g: what is the adequacy

(property) of emotional support from the co-workers; or what is the amount (property) of informational support from the supervisor? The results of a study (McIntosh, 1991) show that this is a useful conceptualisation for explaining differential effects of social support.

The discussion of the main conceptualisations of social support in section 3.2 and the evidence for their application in social support research leads to the following conclusions. The aspects of social support that are most likely to impact on work related traumatic stress and its outcomes are individual perceptions of emotional support from others in the work place. It is also important to consider the different support needs of different groups of individuals. These and other multiple aspects of support may be usefully considered as properties of each type and source of social support. In the following section we turn to consider a model of the role of social support that explicates the relationship of these important aspects of support to traumatic stress.

3.3 The Buffering Model of Social Support

The model of PTSD aetiology suggests that social support moderates the relationship of traumatic stress and psychological health outcomes. Studies of social support often give evidence of a correlation between health outcomes and social support but there are two possible processes through which this could come about. Social support may have a main effect on health or there could be an interaction between stress and social support, which is a moderating effect. The moderating effect of social support is also known as a buffer when there is an interaction in which higher levels of support result in a weaker relationship between stressors and strains than lower levels of support. This buffering effect of social support has no beneficial effect on health among those with little stress but the beneficial effects of support may increase as stress increases. In contrast, a main effects model of these relationships, suggests that social support has an effect on levels of health regardless of levels of stress.

House (1981) says that although the concept of buffering is implicitly or explicitly central to most major writings on social support, in fact support has both main and buffering effects. However, the buffering effects are especially unique and important when considering the effect on health of irreducible stresses at work. The buffering hypothesis has been called the dominant social support hypothesis related to occupational stress (Beehr, King & King, 1990) and is emphasised in the general social support literature in regard to the relationship between stressors and strains (McIntosh, 1991). Cohen and Wills (1985) explain the buffering effects of social support on health as attributable to the enhancement of coping responses to stress and by an intervention in the stress reaction and consequential harmful physiological or behavioural reactions.

A review of the empirical evidence (Cohen & Wills, 1985) led the authors to conclude that, there is consistent evidence to support the buffering hypothesis, when certain conditions have been met. If the researchers measured perceived availability of social support, and the support functions assessed were those that would enhance coping abilities appropriate to the stressor (esteem and informational support functions being consistently successful), then buffering effects were more likely to be found.

Fusilier et al. (1987) found buffering effects for social support on job stress with physical health outcomes in a sample of 312 police officers and fire fighters. LaRocco et al., (1980) found buffering effects for social support with both psychological and physical health outcomes across a range of occupations. Others (e.g. Beehr, 1976; House, 1981) have reported buffering effects for a variety of stressors and strains in organisational contexts. While some studies support the buffering hypothesis and the predictions of Cohen and Wills (1985) there are others that do not (Ganster et al., 1986). The following two sections will examine examples of studies that show *main effects* of social support on the outcome variable, or show what has been termed '*reverse buffering*'. A third section will describe a refinement of the buffering model which could explain some of these findings: the '*specificity hypothesis*' suggests specific social support requirements for the buffering of stress.

3.3.1 Main effects of social support on occupational strains

One of the issues that arises in conceptualising social support as a buffer of stress is that main effects are also commonly found. House (1981) suggests that social support has both main and buffering effects on outcomes and although the interaction effects are of primary interest in the model of PTSD, the probable main effects of social support on psychological outcomes cannot be ignored. Whenever researchers have studied the buffering hypothesis of social support, the results, even when interaction effects are found, also show main effects for social support variables for which no buffering effects are shown. This means that the social support variables are directly related to the psychological outcomes, no matter what the level of the stressor. Barrera (1986) cites previous evidence from cross sectional and longitudinal studies to demonstrate that measures of perceived social support consistently show negative relationships with psychological distress. Since then researchers working with occupational groups such as nurses (Beehr, King & King, 1990; Ogus, 1990), police (Kaufmann & Beehr, 1989), soldiers at risk for combat stress reaction (Solomon, Mikulincer & Hobfoll, 1987), and social workers in two countries (Himle, Jayaratne & Thyness, 1989), have found more main effects of perceived support on psychological strains, than buffering effects (on a variety of stressors).

3.3.2 Reverse buffering

In addition to mixed evidence supporting the buffering hypothesis, other studies have reported different interaction effects in which the social support-stress interaction is positively related to strains, so that support appears to exacerbate the effects of stressors on strains. For example, McIntosh (1991) reported that, in a sample of 186 nurses, the amount of support increased the impact of workload on emotional exhaustion, and workload was related to higher physical symptoms when the adequacy of social support was high rather than low. This effect which has commonly been called 'reverse buffering' (Kaufmann & Beehr, 1989) has also been reported by others: by Beehr (1976), measuring group cohesiveness as a support in a sample of workers in a diverse set of jobs across several organisations; by LaRocco et al. (1980) for supervisor support in a sample of males in 23 occupations; by Kaufmann and

Beehr (1986) for supervisor, co-worker and extra-organisational, emotional and tangible support in a study of nurses; by Kaufmann and Beehr (1989) for instrumental support in a survey of police officers; and by Buunk and Verhoeven (1991) for intimate and instrumental work related social support among police officers.

Beehr (1985) and Kaufmann and Beehr (1989) have reviewed the explanations that have been offered for these results, which fall into two broad groups. First, that the effects of social support are specific to social circumstances and the variety of stressors and sources of support must be taken into account for increased understanding of these effects. Secondly, that the actual form that supportive communication takes (e.g. positive or negative attitudes to work stressors) between individuals and groups could be critical to the effects that support has on health outcomes. These two explanations signal the need for a closer examination of the component variables of the buffering hypothesis. As well as a variety of approaches to the measurement of social support itself, a wide variety of stressors and outcome variables (strains) has been measured. The importance of the nature of these variables will be discussed in the following section.

3.3.3 The specificity hypothesis.

One explanation for findings of main effects or reverse buffering is that social support needs are specific to the different sources of stress and the effects are related to the sources and types of support. This has been proposed since the earliest development of the social support field of inquiry and is linked to the buffering model (Sarason et al., 1990). In comparing their results with other findings using the same measures, LaRocco et al. (1980) suggested that the occupational task structure and environment may determine which sources of social support are most salient. Fusilier et al. (1987) found that their results supported a conclusion that interactions of social support and stress may be peculiar to certain stressors and strains.

Cohen and Wills (1985) offer a theoretical model of stress-support specificity, suggesting the importance of assessing the coping requirements elicited by a stressful

experience. The studies examined in the Cohen and Wills review do not provide evidence to discriminate the stress-support matching hypothesis from a general stress buffering effect. However a consistent finding in the literature of a pure buffering effect (with no main effects) led these authors to suggest that certain support resources act only in the presence of an elevated stress level and that these specific social support functions are responsive to stressful events. Other theorists (e.g. Barrera, 1986; Hobfoll & Stephens, 1990) support this notion of the matching of specific needs from certain stressors to the type of social support that will be beneficial.

Cutrona and Russell (1990) have developed these suggestions and propose a model of optimal matching between stress and social support. This model predicts that uncontrollable events (harm or loss) will require social support dimensions that require emotion focused coping, therefore emotional support will be more effective for dealing with uncontrollable events. Similarly, controllable events (threat or challenge) require problem-focused coping, so that instrumental support will be more effective. After reviewing those studies that do take a multidimensional approach, Cutrona and Russell concluded that for uncontrollable events emotional support and a component relevant to the life domain in which the event occurred were best related to positive outcomes. Overall, their review suggests that for some events certain kinds of social support are appropriate but for other events a broad range of social support components are required for recovery. The authors suggest that to improve matching, the event categorisation scheme should be developed and more distinct sub-categories of social support types defined. Given that the areas of social support already defined (i.e. emotional, instrumental etc.) are already highly intercorrelated this may lead to more confusion and conflict in the broad field of social support. However, when working in a specific area such as PTSD, in which the relation between a specific type of stressor and its outcomes are already well described, it seems appropriate to define as specifically as possible the likely social support needs, in terms of both source and type, of people who experience traumatic events. The fourth section of this chapter will outline three approaches to social support that focus

on the specific support needs of those who suffer traumatic stress at work.

3.4 Approaches to Social Support

This section describes three approaches to the measurement of social support in the work place that have been conceptualised in terms of the specific support needs that may be elicited by work related trauma. The first concerns the measurement of the *content of communication* and has been developed in the social support area to study the buffering effects of work related stress. The second approach entails the measurement of *talking about trauma*. This aspect of social support is more specifically related to the needs evoked by the traumatic experience itself and is drawn from the social support literature as well as from theoretical, clinical and empirical work based on PTSD. The third approach is in regard to *attitudes to expressing emotion* in the work place. This aspect of support is related to assessing the opportunities that individuals have to meet their needs in the face of traumatic stress and more specifically to police organisational 'culture'.

3.4.1 The content of communication

A second explanation for unexpected findings in social support research suggests that what actually goes on between people who are giving each other support needs to be explored. LaRocco et al. (1980) and Beehr (1976) suggested that the buffering effects of the communication with supportive others could be "negative" or "positive". In studying the effects of emotional support on burnout and work stress, Himle et al. (1989) found no buffering effects. They noted that the important factor may not be the mere presence of support from supervisors and co-workers but rather the circumstances and possible conflict, such as competition or fear of showing weakness by sharing problems. These sorts of suggestions were taken further by others such as Kaufmann and Beehr (1989) who proposed that the qualitative differences in the content of communication of supportive people in studies of work related stress should be taken into account.

There are very few studies so far that have attempted this kind of exploration, but

work that has been done has been fruitful. Through direct observation of police radio dispatchers, Kirmeyer and Lin (1987), derived four categories of communication with superiors: interactions initiated by dispatchers about work topics and non-work topics and interactions initiated by their superiors on work or non-work topics. Four parallel categories applied to communication with peers. The findings showed that the perception of social support was linked with personal interaction at work. Also the relationships between perception of support and communication were affected by the categories of interaction in sometimes surprising ways. Beehr, King and King (1990) compared a functional operationalisation of social support with a measure of the contents of communications, between employees and their supervisors, among 225 nurses. A three way typology of contents of communications: positive job-related, negative job-related and non-job-related communication was supported by the results. The nurses' perceptions of functional social support were more closely related to positive job-related and non-job-related communications than to negative communications. The relationships between stressors, social support and psychological strains were measured and main effects were found for functional support and for positive communications on individual strains. The findings indicated that the buffering effect is most apparent when social support is measured as communication, with the most consistent interactions resulting when non-job-related communication with supervisors was the moderator.

The content of communication is a potentially valuable way to operationalise social support as a moderator of stress and strains. There are two possible approaches to examining the ways in which individuals interact with supportive others within the terms of the conceptualisations of social support that have been developed over the last two decades. First the approach of Cutrona and Russell (1990) who recognise that there are many ways in which emotional or instrumental support may be expressed. However analysing the types of social support, as they suggest, into increasingly refined categories to reflect this, leads to problems of inter-correlation and increasing overlapping of categories (e.g. emotional support that communicates belief in one's competence is suggested as a contributor to problem-focused coping).

A conceptualisation that seems more useful here is that suggested by McIntosh (1991), in which these sub-categories are seen as properties of support, that apply across the matrix of types and sources of support. In this way the content of communication may be examined as a property of any of the recognised types and sources of support. When considering social support as a moderator of trauma and PTSD, there is strong evidence to support the content of communication as a salient property to explore. This evidence will be examined in the following section.

3.4.2 Talking About trauma

An example used by Cohen and Wills (1985) of social support resources that promote well-being in the face of stress, but not necessarily in non-stressful conditions, is having access to persons to talk to about one's problems. There seems to be a consensus in the PTSD literature that talking about traumatic experiences and expressing emotions connected with the experiences is the most important therapeutic behaviour for relieving post-traumatic anxiety (van der Kolk, 1988; van der Kolk & Saporta, 1993). Stretch (1986) suggests that social support systems are important for promoting the catharsis or abreaction of stressful experiences, and Brom and Kleber (1989) discuss the importance of the social network in allowing a victim to describe the traumatic experiences and the emotions that they have elicited.

Cognitive processing of the emotions connected to the trauma is central to Horowitz' (1993) theory. The model outlined in Chapter two includes communication with supportive others as an important aspect of the rebuilding of schemas or assumptions shattered by the experience (Janoff-Bulman, 1993). Other theoretical perspectives have often arrived at the same conclusions. Foa, Steketee & Rothbaum (1989) provide a cognitively based explanation for the importance of expressing the cognitive and affective information that is based in the trauma, in terms of activating the fear memory so that it is available for modification; an emotional processing that is important in preventing development of the disorder. Keane, Zimmering et al.(1985), from a behavioural perspective, assert that complete exposure to all components of the memory is important for consolidation and extinction of adverse effects.

Symptoms are maintained through avoidance, rather than coping with the memories through open discussion.

There is empirical evidence that supports the importance of discussion of the events and their emotional effects. McFarlane (1988b) in a study of firefighters involved in an Australian bush fire found that avoiding discussing the traumatic experience was associated with increased PTSD symptomatology. Frye and Stockton (1982) found that Vietnam Veterans who were experiencing posttraumatic stress did not in general talk about their war experiences with family upon their return, and in another study, Vietnam Veterans who were traumatised by their war experiences were more likely to report decrements in emotional support since their return (Keane, Scott et al., 1985). Hobfoll and Stephens (1990) cite evidence from studies of Israeli combatants and more general stressors that support the conclusion that having confidants is critical to stress resistance in traumatic situations. In evidence reported from more qualitative data, the victims of trauma often express the need for, or efficacy of, talking about the experiences and associated emotions. Norman (1988) found that Vietnam nurses were less likely to have developed symptoms of PTSD if they were part of a supportive network that gave them the opportunity to discuss their war experiences. In interviewing the victims of a volcanic eruption one and three years after the event, Murphy (1988) found that a major theme was how support was given and that the best help was given by those who were willing to listen. Weinrich, Hardin and Johnson (1990) reported that the most frequently observed coping strategy of hurricane victims directly following the disaster, was talking about their experience.

The evidence reviewed above strongly suggests that discussing traumatic events and expressing the associated emotions, especially with those who have shared the event or a similar experience, is a natural coping mechanism for processing the effects of trauma. Such expression is also apparently important in avoiding the development of disorder. Williams (1993) discusses the implication of this importance for dealing with traumatic stress in the work place, and in particular with police officers: "The single most effective method for the *resolution* of traumatic stress is talking about

the trauma with others who went through it....Our experience has been that the support of co-workers during the weeks following the trauma is vital to *resolution*" (p.932).

3.4.3 Attitudes in the work place

Another important aspect of the content of communication as a supportive function in the development of PTSD is not only whether people have the opportunity to talk about their experiences but how they communicate. In the process of communication the potentially supportive others have an important role as listeners with appropriate responses. Without validation or legitimisation of their experiences, victims may be unable to cope successfully (Stretch, 1986) and the fact that open discussions of the traumatic experiences of war veterans were often socially discouraged is seen as part of the failure of many to process their trauma (Keane, Zimmering et al., 1985). In a study of social support and depression among women, Brown, Andrews, Harris, Adler and Bridge (1986) found that confiding alone does not seem sufficient to prevent negative effects; it must also be associated with active emotional support and a lack of negative response.

In an organisational context the attitudes in the work group may well influence the opportunities and willingness to express the effects of trauma. If group attitudes are against the expression of certain subjects or emotions then the support offered may seem positive in terms of cohesiveness but could have negative psychological consequences in the face of stressful events. Jayaratne et al. (1988) raise the issue of potential negative consequences of informal support networks at work and cite other authors who believe that the quality and nature of such support is not always positive. How these issues may affect police officers in particular will be discussed in Chapter six.

3.5 Summary

The review of the relevant literature in section 3.1 suggests that the measurement of subjective perceptions of social support is the best approach in the context of the present study. Of the functions of perceived social support that have been measured, emotional support is considered the most appropriate to the study of traumatic stress and of the possible sources of social support, work related support may be the most important. The differences in social support needs of different groups should also be considered. McIntosh (1991) has also proposed that further aspects of support that are considered in particular situations may be conceptualised as properties of social support that is defined by its function and source.

The PTSD model proposes that social support is a moderator of the relationship between the stressor and PTSD as an adverse outcome. The buffering hypothesis of social support predicts a specific form for the interaction: if the levels of social support are higher, then the positive relationship between traumatic stress and psychological or physical outcomes will be weaker. Reference to social support as a buffer of trauma in this thesis will be referring to this specific form of an interaction.

Theoretical models of social support as a buffer of stress suggest that there are specific aspects of social support that protect against the adverse affects of certain stressors. In the case of PTSD the evidence supports a view that the content of communication, including talking about the trauma itself, is the salient aspect affecting outcomes. In the work situation such support from within the organisation, especially from the people who have experienced similar trauma, could be the most important. Thus, the content of communication could be viewed as a property of emotional social support from peers. However, evidence of 'reverse buffering' suggests that the support offered by networks in the work place can be detrimental, and there are also indications that negative attitudes, towards the expression necessary for processing the effects of trauma, could have damaging consequences.

Before the problems of the adverse effects of support networks are considered in more detail, the following chapter will examine the evidence for links between social support and PTSD outcomes. This empirical evidence will be discussed in terms of the aspects of social support and PTSD theory that have been focused on in the last two chapters.

Chapter Four

EVIDENCE OF A RELATIONSHIP BETWEEN SOCIAL SUPPORT AND PTSD

4.1 Chapter Overview

In this chapter we turn to the empirical evidence for the suggestion that social support is a moderating factor between the traumatic event or stressor and the development of PTSD. Social support has received growing attention as a consistently important variable in PTSD research and empirical studies continue to provide support for its importance in relationship to the development of the disorder. Most of this work has been done in the area of post combat PTSD either with American Vietnam war veterans or in the Israeli army. More recently attention has focused on the victims of disasters and those whose civilian work brings them into contact with traumatic experiences. The evidence will be reviewed first from those studies which have measured the types of functional support and second from those which have measured structural support (see section 3.2.2). A final section will summarise this evidence in terms of its limitations and strengths as it applies to the study of social support and work related stress.

4.2 Assessment of Functional Social Support

4.2.1 Social support and post-combat PTSD

Multi-factorial studies

Most of the measures of social support used in the study of PTSD use a functional approach. They directly assess the extent to which supportive relationships provide particular functions, as opposed to structural measures that describe or count the existence of relationships (Cohen & Wills, 1985). Those studies which have assessed the potential of a range of variables to distinguish between combat veterans who are

suffering from PTSD and those who are not, found that social support is one of the salient variables. Frye and Stockton (1982) used a self assessment questionnaire to study 90 combat veterans (officers), of whom 21 were assessed as having PTSD and 19 as borderline. The helpfulness of the family on return, was included as one of several pre-service, in-service and post-service variables. The results showed that the perceived helpfulness of the veteran's family was related significantly to post-discharge adjustment. Those veterans who suffered from PTSD had avoided discussing the war on return, reported a more immediate release from the army (and therefore lost the support of fellow soldiers), had experienced higher levels of combat and had a more external locus of control. Green and Berlin (1987) gave interviews and questionnaires to 60 veterans referred from a medical centre who were suffering varying degrees of PTSD symptomatology. Five psychosocial variables and their relationship to PTSD were examined, and social support was measured by the use of both structural and functional items. Only the functional measure - the extent to and ways in which the veteran made use of his social support network - was significantly and negatively related to PTSD symptoms. Other significant variables were combat intensity, current impact of the stressor and current life stress. Both of the latter studies suffer from sampling problems: Frye and Stockton (1982) used a very select group of veterans and Green and Berlin (1987) only included a sample of veterans attending a clinic who are a very small and particular proportion of those who suffered combat stress. There are other studies that have included community groups. Solkoff, Gray and Keill (1986) compared a sample of 50 veterans, who were attending a clinic and diagnosed as suffering from PTSD, with 50 veterans who were not diagnosed PTSD, and examined several factors, thought to contribute to morbidity, through a range of interview items. PTSD subjects reported less support from their families and fewer contacts with other veterans, or people to talk with about their experiences. Other significant variables were more intense combat experience and more positive attitudes towards the war prior to entering service. Barrett and Mizes (1988) surveyed 70 veterans in the general population by mailed questionnaire, which included a social support scale measuring both emotional and instrumental support. They also measured the severity of combat, school, family, employment and social

pre-morbid adjustment factors, and various aspects of symptomatology. As expected, the veterans who had high combat levels reported more PTSD symptoms than those with low combat levels. There was also a significant effect of social support in which high levels of social support were negatively related to PTSD symptoms. There were no effects for any of the pre-morbid factors.

Stretch (1986) focused on the most consistently significant of these variables: intensity of combat and social support. A questionnaire was used to survey 238 male veterans who were still on active duty and a control group consisting of 85 veterans serving at the same post who did not serve in Vietnam. Social support was measured by asking respondents about the attitudes and responses met from various groups after the war and analysis indicated that this first year social support accounted for 15% of the variance in PTSD symptoms. This was even greater than combat severity which accounted for 12% of the variance. While noting the lower rate of PTSD incidence in this sample of servicemen than has been recorded for other veterans, Stretch reports that the "...social support received appears to act as a moderator variable such that negative social interactions exacerbate symptoms of PTSD while positive social support acts to alleviate PTSD symptoms" (p.477). A more recent study by Boscarino (1995) also focused on social support and combat exposure. He compared a large sample of 2,490 veterans, who served in Vietnam, with a control group of veterans of the same era (1,972) who did not. Using a measure of perceived support, it was found that lower social support was associated with a range of psychiatric disorders, including PTSD. Once again the author suggests that social support should be further investigated as a moderator of the effects of traumatic stress.

Studies that focus on social support

Other researchers have concentrated on exploring the aetiological role of social support alone. In a study of the social support systems of Vietnam veterans, Keane, Scott, et al. (1985) compared 15 combat veterans who were diagnosed with PTSD, 15 well adjusted veterans, and 15 hospitalised veterans who were not in combat and not diagnosed with PTSD. A structured interview was designed to assess support at

three points in time: before entering the military, shortly after discharge and shortly before the interview. Descriptions of social network size and five dimensions of social support were assessed: material aid, physical assistance, sharing thoughts, feelings and experiences in conversations, information or advice, and positive social contact. These were also assessed as actual and potential sources, and for overall satisfaction with each source. The results showed that veterans who had been traumatised by their combat experiences showed significant decrements in the structural and functional dimensions of social support over time. These changes were mostly related to the emotional support dimensions in actual support and satisfaction with support. The two comparison groups reported either no change or strengthening of their support systems.

Solomon, Mikulincer and Hobfoll (1987) studied the effects of social support during combat on 382 Israeli soldiers who had developed combat stress reactions (CSR) during the 1982 Israeli - Lebanon war, and groups of matched controls. The social support measure was subsequently analysed to yield 5 factors: emotional support from officers and peers, instrumental support from officers and peers, plus order and organisation. Other factors included in this study were battle intensity and loneliness. Greater social support was found to be related to less likelihood of loneliness and CSR. Both instrumental and emotional support from officers was the most important contributor to CSR and this was a direct effect; there was no significant interaction of battle intensity and officer support. Social support after combat was measured on a sample of 255 of these soldiers followed one and two years after their involvement in the war (Solomon, Mikulincer & Flum, 1989). The outcome variable for this group was the development of PTSD and the predictors were life events and social integration. Social integration was measured as the soldiers' perceptions of support from different members of the society to which they had returned. Veterans who developed PTSD claimed that the caring social network they needed for buffering the negative impact of their war trauma was not available. Only subjects who had less social alienation appeared to benefit psychologically from positive life events. When social support from society was compared with family support, two years after the

war (Solomon, Waysman & Mikulincer, 1990), both external sources of perceived support were significantly related to loneliness. Family relations were the most highly correlated, indicating that the family was a more important source of perceived support. As loneliness was found to have a direct effect on psychopathology, the authors concluded that family and societal support promote mental health via their impact on feelings of loneliness.

A series of prospective studies have been carried out by Solomon and her colleagues with samples from the same group of soldiers to assess a variety of related variables and PTSD outcomes. The social support measure used in the following four studies was the same: assessing perceived emotional and instrumental support from the respondents' social network (e.g. family, friends, acquaintances) to give one total score. When the relations between social support and PTSD were examined at two and three years after the war (Solomon, Mikulincer & Avitzur, 1988), findings showed that in general the intensity of PTSD declined and there were increased perceptions of social support between the effects of these wars on women. Norman (1988) interviewed 50 nurses who served in Vietnam in the military about their war experiences and the presence of PTSD. As with male veterans the two variables that influenced the level of PTSD were the intensity of the wartime experience and supportive social networks after the war. Social support was measured by questions to determine the presence and impact of social networks both in Vietnam and after the war and a quantitative score was calculated for each subject. Correlations between these scores and PTSD showed that the more poorly defined the nurses' social network after Vietnam, the higher the incidence of PTSD, and this correlation was consistent over three time periods. The women with strong social networks were usually still in the military and keeping in contact with people they served with. Qualitative analysis of the interviews supported the view that the opportunity to talk with supportive people who understand the experiences is protective against developing the disorder.

In general, the studies of PTSD and related disorders among combat veterans that

include social support as an independent variable, confirm the importance of perceived functional support in relation to the development of PTSD symptoms. Social support and the severity of the stressor, are two variables that have shown a consistently significant relationship with psychological and physical health outcomes in a variety of approaches. It is this variety of approaches however that leads to a confusing picture when the actual nature of the support that is salutary is examined. There is little agreement in approaches to the classification and assessment of social support, and a number of different functions and sources have been explored. The literature concerning social support for civilians following disasters affords better opportunities for comparisons of the support functions.

4.2.2 Social support and PTSD among civilians

Social support following a disaster in civilian life has received increasing attention more recently. Cook and Bickman (1989) surveyed 96 victims of a major flood with questionnaires that measured self-reported levels of depression, anxiety and somatisation at five times within six months of the disaster. Perceptions of social support were measured with an instrument focusing on tangible (giving material or physical aid), belongingness (the availability of friends for social activities) and appraisal support (provision of advice). The results were expected to show that low levels of such support were related to high levels of symptomatology, and that high levels of support buffered the stress resulting from the disaster. In fact perceived availability of support was not related to psychological distress (anxiety and depression) immediately following the disaster nor five months afterwards. At the three intermediate times significant correlations showed that more tangible support and belongingness support were related to fewer symptoms of distress. It was concluded that these results confirmed the need for continuing support for at least a few months after a crisis. The researchers found no evidence of an interaction to support a buffering effect for support but suggest that their results show that tangible and belongingness support function as coping resources. These social support functions help in the short-term recovery from the psychological effects of a disaster. Therefore, having friends and receiving material aid is important in helping people

recover from the shock and distress of a disaster, but will not protect them from possible long-term psychological effects. However, it is these long-term effects, when 'distress' becomes 'disorder', and ongoing work and family life is disrupted, that are the concern here.

One aspect of social support that Cook and Bickman (1989) did not measure, in fact they deliberately excluded it from their study, is emotional support. However there is evidence from several different sources that points to emotional support as the important aspect of support in the prevention of PTSD. One study that is comparable with the Virginia flood study is that by Joseph, Andrews, Williams and Yule (1992) with the survivors of a cruise ship disaster in Britain. The authors employed similar measures of general psychological symptoms as well as a specific measure of PTSD symptoms. The support measure used was designed to assess a high level of confiding with a high level of active emotional support. This was related to two time periods: just after the disaster and three months later. Supporting Cook and Bickman's findings, the initial social support levels were only weakly related to symptoms, which were higher on all measures at this time. At three months however, social support was still significantly related to all measures of anxiety and depression and PTSD. Overall, the results suggested that lower levels of social support is related to higher core PTSD symptoms as well as depressive and anxiety symptomatology. In a follow up study (Joseph, Yule, Williams & Andrews, 1993) measuring PTSD symptoms and social support 18 months following the disaster, it was found that the support available at and following the time of the crisis was predictive of later avoidance symptoms (a subscale of the PTSD measure). The results suggested that support at the time of the disaster predicted later avoidance symptomatology but not symptoms of intrusion. Because of the small sample and some evidence of self-selection related to avoidance symptoms, these findings deserve further exploration. At present they suggest that the measurement of emotional support, rather than instrumental or belongingness support, is related to long term PTSD and related psychological symptoms.

4.3 Assessment of Structural Social Support

Structural measures of social support are less commonly used (except in conjunction with functional measures) and have not proved as useful in uncovering relationships between support and PTSD symptoms. When Escobar et al. (1983) interviewed 41 Hispanic Vietnam veterans, who were diagnosed with PTSD and attending a clinic, they used a measure of social support that tapped several aspects of the structure of the social networks of the respondents. Only on the size of the network did veterans with minimum symptoms report significant differences to those veterans who had been classified as highly symptomatic. Escobar and colleagues suggest that emphasising the quantitative aspects of networks and not sufficiently addressing the quality of social support may weaken attempts to investigate the relationship between support and PTSD.

Solomon and Oppenheimer (1986) assessed the role of five social network variables in the aetiology of CSR in combat veterans of the Yom-Kippur war. The measures of social integration were derived from military records and in the author's own words were "somewhat crude". The results for three of the variables supported the hypothesis that social integration in the community may attenuate the pathogenic effects of stress: they suggested that soldiers who were born in Israel, who lived in communal settlements and who had contact with their families, were at a lower risk for CSR. In contrast the two other variables did not support the hypothesis that only children and those from bereaved families were at higher risk for CSR. In fact, these groups seemed to be at lower risk than soldiers from large intact families.

Following a tornado, Madakasira & O'Brien (1987) surveyed the mental health status of 116 disaster victims. Fifty nine percent of the victims met the criteria for acute PTSD and the only psychosocial variable found to be related to the presence of severe symptoms was social support. The assessment of the structure of social support asked respondents for the number of sources of support that they could rely on. In a prospective study of disaster victims, self-efficacy was compared with social support as a mediator between stress and health (Murphy, 1988). One hundred and forty

people who had experienced five different levels of magnitude of loss from a volcanic eruption, including a control group who had experienced no loss, were surveyed by questionnaire at one and three years following the disaster. Social support was measured with an instrument that included two components: the quantity and perceived quality of social supports. Outcomes were measured as mental distress, depression, and somatisation. The results showed that self-efficacy was a significant predictor of all three health outcomes whereas the number of social support contacts was not. The social support scores themselves showed a lack of variability (only moderate and high levels of support were reported) suggesting that either, these disaster victims did not suffer from lack of support, or the structural basis of the index was not sensitive to important differences.

The evidence from disaster and military studies which use mainly structural assessments of social support is weaker than that from studies which rely on the assessment of the ways in which support functions. There is no evidence for the importance of the quantity of supportive others, although there is some support for examining the sources of support in this way.

4.4 Summary of Social Support Evidence

There are noteworthy limitations of the social support and PTSD literature in general, including the retrospective nature of much of the self-report data (e.g. Keane, Scott et al., 1985; Norman, 1988; Solomon et al., 1989; Stretch, 1986) which may have led to distortions in reporting past perceptions of social support. Also, the effect of current PTSD symptoms themselves, on people's evaluation of historical psychological events is unclear (Keane, Scott et al., 1985).

An even more problematical limitation is the cross-sectional nature of the comparisons (even in most longitudinal studies) between social support and PTSD, which leaves the direction of causality unclear; are social resources and feelings of loneliness a cause, consequence or correlate of PTSD? This question is of especial concern because the symptoms of PTSD are very likely to affect social functioning, and

feelings of detachment and estrangement from others themselves can be a symptom of the disorder. Many of the studies so far have focused on people who are already diagnosed with PTSD, at which point in time it is too late to definitively establish any causal link, as the disorder and social resources would be expected to continue a mutually reinforcing relationship (Solomon, Mikulincer & Habershaim, 1990). So far there is only a little evidence that can help tease out these confounding factors. Solomon et al. (1989) took measurements at one and two years after combat which showed that lack of social integration for soldiers at homecoming is associated with the course of PTSD. Joseph et al. (1993) found that, of two core PTSD symptoms measured two years after a disaster, one was associated with social support measured at the time of the disaster. This is a promising result but this study was also subject to further limitations as described above. In assessing social support as a possible moderating factor in the aetiology of PTSD, these limitations must be addressed. Nevertheless, the evidence so far provides a sound basis for continuing research in the area.

When included in studies of PTSD with other predictor variables, social support has been a consistently important contributor to the variance in PTSD symptoms. When assessing the relationship of social support and psychological outcomes, measures of the functions of social support rather than the structure of that support are more successful. Measures of the emotional function of support are often the most important aspects of support in relation to PTSD outcomes, especially for long term rather than short term distress.

Murphy (1988) has suggested that what actually happens when people draw on supportive others is one of the important questions in this area. In this regard, the emphasis in the PTSD literature on emotional functional support, reinforces the findings from the organisational support research area that were reviewed in Chapter three. Furthermore, there is a body of evidence suggesting that the disclosure of emotions to supportive others is one of the important elements of support that affect the development of both psychological and health outcomes following trauma. The

next chapter will examine this evidence. The focus is on physical health outcomes but this direction of inquiry provides important indications regarding the actual content of emotional support.

Chapter Five

DISCLOSURE OF EMOTIONS AND HEALTH

5.1 Chapter Overview

In this chapter further evidence for a link between the effects of trauma and social support will be described. This evidence is largely experimental and focuses on the relationship between the disclosure of emotions concerning traumatic experiences and the physical health outcomes of trauma. A body of experimental work will be described, that provides empirical support for a relationship between talking or writing about traumatic events and health outcomes. These studies have shown that the inhibition of traumatic experiences is detrimental to health and talking or writing about a trauma has positive health outcomes.

The chapter will begin with an outline of the links between physical health symptoms and PTSD as outcomes of trauma. This will be followed by a description of the studies of trauma and the disclosure of emotions. Disclosure is then discussed as an aspect of social support, i.e. talking about trauma, that is related to positive health outcomes. This discussion includes the application of Horowitz' PTSD model to attempts to explain the beneficial effects of the disclosure of a traumatic experience on physical health.

5.2 Links Between PTSD and Physical Health

The disclosure of trauma studies have been conducted with physical health as the outcome measure. The association between psychiatric morbidity and physical health effects following trauma have been well established and the psychological symptoms of trauma may also be manifested as somatic problems. This co-morbidity in itself is considered an important area of PTSD research and deserves some detailed consideration prior to examining the evidence for the benefits of disclosure.

The harmful physiological effects of stress are documented in experimental and epidemiological studies (see Solomon et al., 1990) and there is a great deal of evidence that physical morbidity is associated with PTSD symptoms. In a New Zealand group of 573 Vietnam war veterans (Long, Chamberlain & Vincent, 1992) those classified as PTSD cases (12%) also reported more illness symptoms, chronic illnesses, disability days, contact with health care providers and rated their overall health as very much poorer than non-cases. Many other investigators have found PTSD symptoms associated with reports of poorer physical health and more physiologic complaints in returned Vietnam Veterans (e.g. Barrett & Mizes, 1988; Litz, Keane, Fisher, Marx & Monaco, 1992; Stretch, 1986; White & Faustman, 1989). Impairment of physical health has also been associated with psychological morbidity in general populations following disasters such as volcanic eruptions, earthquakes and floods (Raphael, 1985). Although very little work on this aspect of trauma has been carried out with police samples, a study of the effects of police shootings (Manolias & Hyatt-Williams, 1993) found that the three severe cases of PTSD identified in interviews also suffered from other symptoms such as severe depression, digestive upsets, migraine headache, and loss of sensation in the right side of the body. It is apparent that along with the disabling symptoms of PTSD, people who develop the disorder are more likely to be suffering from a range of other incapacitating physical symptoms.

5.3 The Disclosure of Trauma Studies

This work has been mainly conducted by James Pennebaker and colleagues who have developed an experimental paradigm in which groups of people write or talk about their traumatic experiences, usually in brief sessions over several days. Following this disclosure, measures of physiological reactivity and long or short term health outcomes are taken. A randomly assigned control group is also used in which the participants write or talk about trivial topics. Recently other researchers have followed this method to answer various questions that have resulted from the disclosure and health research. From the beginnings of this programme non-experimental methods have also shown positive results.

In a sample of 200 corporation employees, the reporting of objective health problems, including cancer and hypertension was significantly predicted by the experience of an early trauma. Whether or not the victims had confided in somebody about their traumatic experiences added to the predictive power, and these effects held when SES, gender, type of trauma and social support indicators (size of network) were controlled for (Pennebaker & Susman, 1988). Similarly, questionnaire studies have shown that individuals who have had a childhood trauma and not talked about it have more physician visits than those who have disclosed their trauma (Pennebaker, 1992).

In one of the earliest of the writing experiments, Pennebaker and Beall (1986) found that students writing about traumatic experiences made significantly fewer health centre visits in the five months after the study, than those who wrote about non-traumatic topics. Similar results were also found by Pennebaker, Colder and Sharp (1990) and Pennebaker, Kiecolt-Glaser & Glaser, (1988). The latter also demonstrated enhanced immune functioning as well as drops in physician visits for the trauma writing group. Francis and Pennebaker (1992) found health effects in the same direction when measuring the work absence records and blood measures of university employees. Esterling, Antoni, Kumar, and Schneiderman (1990) also found that higher emotional disclosure in students who wrote about traumatic experiences was associated with better immune function. In a study using a sample of New Zealand medical students (Petrie, Booth, Pennebaker, Davison & Thomas, in press) an "emotional expression" group (i.e. the group asked to write about their deepest feelings about their trauma), showed enhanced immune function and higher antibody levels against hepatitis B, following vaccination, than a control group. The researchers suggest that this last immunological finding provides a stronger link with real health consequences (Petrie, Booth & Davies, in press).

5.4 Disclosure of Emotion

The writing topic of the last two studies described above emphasises an important feature of the disclosure findings: the expression of emotion as an essential aspect of describing trauma. Pennebaker and Beall (1986) reported that people who wrote only about the facts of their trauma showed no more health benefits than the non-trauma writers. People who wrote about the emotions and thoughts surrounding traumas showed the most health benefits. Further studies examining the emotionality of speakers disclosing trauma, including Holocaust survivors (Pennebaker, 1993; Pennebaker, Barger & Tiebout, 1989; Pennebaker, Hughes & O'Heeron, 1987) found immediate physical effects and long-term health benefits for those who conveyed the greatest emotion. Pennebaker (1992) believes that emotionally charged expression more fully activates traumatic memory so that the traumatic experience may be cognitively processed. This supports the process which is described in the Horowitz model of PTSD aetiology.

5.5 Disclosure and Social Support

The disclosure of emotion by writing about it may not seem to be a social function, nevertheless Pennebaker (1988) describes the work on disclosure as an opportunity to identify one of the functional variables of social support. Even the apparently private disclosure of the experimental paradigm is in part a social act. Most of the subjects in one experimental study said that it was important that their essays were anonymous, yet 60% of those people said that they would not mind or would very much like people they did not know to read their essays. According to Pennebaker (1988) this supports notions that even when alone, people are writing or talking about their traumas to a symbolic other; there is an audience for the disclosure. These results suggest that writing alone may be therapeutic but recent studies have shown that while writing is beneficial, talking is even more helpful, and sustained talking is usually done with the encouragement of company.

Murray and Segal (1994) conducted an experiment, within the experimental paradigm described above, to compare vocal and written expression as facilitators of emotional

processing. The researchers found positive self-reported psychological effects for the groups who both wrote or spoke about trauma. However, the experimenter ratings, through content analysis, showed that the vocal group expressed more emotion, both positive and negative and showed greater changes in the same psychological effects: cognition, self-esteem, and adaptive coping behaviour. It is suggested that an experimental artefact may have contributed to these results, however they are supported by those of another study using immune measures as the physical health outcome (Esterling, Antoni, Fletcher, Margulies, & Schneiderman, 1994). Here the groups who wrote or talked about trauma had significantly lower Epstein-Barr virus antibody titers (suggesting better immunity to the latent virus) than a group who wrote about trivial topics. Moreover, those who talked had significantly lower titers again than those who wrote. Content analysis indicated that the verbal group also showed the greatest improvements in cognition, self-esteem and adaptive coping behaviour. These results suggest that, while talking about trauma, people find it easier to express a greater range and depth of emotion and show more immediate therapeutic effects. There may also be increased health benefits, although these results are provisional. More recently Pennebaker, Mayne and Francis (in submission) have shown that several of the linguistic factors that predict health outcomes in the writing experiments, generalize to outcomes for language used in social interactions. Overall, the weight of evidence that has resulted from the study of disclosure and health does indicate that the expression of emotion is a salutary aspect of social support.

Pennebaker and colleagues have identified two dependent processes through which emotional expression may influence physical health (e.g. Berry & Pennebaker, 1993). First, the ongoing inhibition of emotional memories requires physical work. Inhibition can increase physiological arousal, and compromise immunological function, thereby acting as a source of physical stress. Burges Watson, Wilson & Hornsby (1992) support this approach, with a more detailed summary of work that suggests a bidirectional communication between the immune and neuroendocrine systems and a consequent relationship between immune reactions and mental disorders. The second aspect of emotional expression is the need to translate a

disturbing event into verbal expression, by writing or talking. As outlined in Horowitz' (1993) schema based theory (see Chapter two), verbal expression may be important to the cognitive processing of new information. Talking about trauma may be seen as necessary for the organisation of overwhelming diffuse emotional memories of the experience, which can then be more readily assimilated. Following from this, Pennebaker (1990) suggests that once the new information has been processed through verbalisation, and incorporated into cognitive schemas, the suppression of thoughts and emotions about the event becomes unnecessary and the body no longer subjected to the physical toll of inhibition.

5.6 Summary

This chapter has summarised evidence suggesting that the disclosure of emotions to supportive others is one of the important elements of support that affect health outcomes following trauma. Together, the last three chapters have discussed theoretical models and the evidence that best explains social support and its function in the prevention of disorder following trauma. The theory, the research and clinical evidence combine to suggest a critical role for emotional social support, and in particular the disclosure of emotions (or talking about trauma), in the normal processing of traumatic experiences. The following chapter considers possible limitations in the work place to the disclosure of the details and the emotions connected with traumatic experiences.

Chapter Six

SUPPORT IN POLICE ORGANISATIONS

6.1 Chapter Overview

This chapter follows directly from the theoretical and empirical endorsement for the salutary role of emotional social support and talking about trauma, as an aspect of that support, following trauma. The chapter also returns to directly focus on the police as an occupational group with particular social support needs. It outlines and discusses evidence for group attitudes in police groups that may affect the type of social support that is available to individual officers at work. It is demonstrated that, while emotional support and the opportunities to disclose emotions may be beneficial, there are particular attitudes in police groups that may operate to prevent such disclosure. At the close of this chapter, the main points from the literature review and rationale that comprises part one are summarised and part two of this thesis is briefly introduced.

6.2 Social Obstacles to Disclosure at Work

Social obstacles that prevent people from talking about their traumatic experiences may come from individual responses or from the mores of a group. Paradoxically the need for belongingness and esteem support may be working against an individual's need to work through a traumatic experience and a greater number of social contacts can increase the inhibition of disclosure. These understandings help to explain the importance of capturing the specific functions of support in relation to PTSD, and the equivocal results for assessments of structural support.

6.2.1 The resistance of others

People who have a large social support network may be unable to discuss the event with anyone and the act of inhibiting emotional memories may be exacerbated in these situations (Pennebaker, 1988; Pennebaker, 1992). Pennebaker and Susman (1988) found that when the effects of network size in a correlational study were controlled for, the relationship of disclosure and health (described in Chapter four) became slightly stronger. The reactions of friends and family may constrain individuals' needs to talk about their traumas even when they want to. Trauma stories may be upsetting or frightening to those who hear them (Horowitz & Reidbord, 1992) and in fact listening to the traumas of others is traumatic (McCann & Pearlman, 1990). Pennebaker (1992) cites examples of research showing negative effects for those who hear about the horrible stories of others and reasons that listening to someone who needs to share their experiences often and in detail is burdensome and often avoided.

6.2.2 Social opposition to the expression of emotion

Occupational groups that are at risk for experiencing work related trauma, such as police officers, fire fighters, soldiers and nurses, may also form cohesive social groups with a distinctive group 'culture'. The effects of group cohesion and an occupational 'culture' on the willingness to disclose emotional experiences is particularly relevant to police groups and this will be examined in detail in the following sections.

6.3 The Effects of Group Cohesion and the Occupational Culture

One of the most important and lasting influences on the attitudes of a police recruit is not the formal training, but the influence of the informal "occupational culture" (Fielding, 1986; Manolias, 1991). One important aspect of police subculture is solidarity or unity, and an unusually high degree of social cohesiveness has been shown among police officers as well as a speedy and powerful socialisation process (Graf, 1986; Shernock, 1988). The strength of group cohesion is a powerful force behind the dissemination and maintenance of group attitudes. Alexander and Wells (1991) point out that institutions and groups that foster feelings of loyalty and

belongingness may also have a prevalent cultural expectation that members of the group should take everything in their stride. In this way group expectations may exacerbate work stress and Kaufmann and Beehr (1989) suggest that group cohesiveness has the potential to be supportive or non-supportive depending upon "the content of communication" of people in work groups. Indications of some aspects of the content of police communication, within peer groups and with superiors, comes from research that has been carried out on police personality and attitudes.

6.4 Police Attitudes

"Both 'attitude' and 'personality' are used to denote a behavioral style of relating to the social world." (Fielding, 1986; p.319). The concern here is with a personality style that is shaped by social forces in the organisation, rather than with individual traits that may predispose a person to choose police work. Most evidence currently supports a socialisation explanation of the personality characteristics that seem to be common to police officers (Shernock, 1988). The term 'police personality', or 'working personality' as it is often labelled, implies that although there are individual differences, there are stable basic attitudinal similarities in police groups. Aspects of police cognitive and behavioural responses to their work situation that have been seen as part of an occupational personality, or as persistent police attitudes, have been labelled: cynicism, suspiciousness, secrecy, conformity and authoritarianism (Davidson & Veno, 1980; Evans, Coman & Stanley, 1992; Graf, 1986; Shernock, 1988; Singer, Singer & Burns, 1984).

These identifiable police attitudes have possibly developed as coping strategies for dealing with work that is distressing or emotionally demanding in a variety of ways. Violanti and Marshall (1983) have presented empirical support for a model in which responses such as cynicism are seen as coping strategies for occupational demands of depersonalisation. This is a sense of forced emotional estrangement in which the emotions are objectified in distressing work situations. Similar coping mechanisms noted by other researchers are denial (Gersons, 1989; Manolias, 1991), distancing (Manolias, 1991) and blocking feelings (Mann and Neece, 1990). Violanti and

Marshall (1983) found that cynicism failed to mediate the stress of emotional distancing and they theorise that these sorts of coping behaviours only increase stress. In 1993, Coman cited further evidence of police use of coping strategies that are not the most effective, although he claims the evidence is still very limited. Graf (1986) concluded his study of occupational stress and social support among police officers with a view that "...cynical statements may be disguising what is actually a supportive dialogue" (p.185) in that, venting cynical feelings to an accepting audience would lead to a reduction in occupational stress while creating a negative effect as well. It seems likely that the police coping behaviours that have developed to deal with other predominant stressors of police work (such as dealing with an unsympathetic client group or a frustrating justice system) are inappropriate for coping with stressors that require the processing of emotions. These stances such as cynicism and suspicion involve the denial of emotions and a general tendency for officers to show little caring or respect for others feelings (Evans et al., 1992). In fact, the sharing of emotional experiences is an aspect of support that police 'culture' does not generally include.

6.5 Attitudes Toward the Expression of Emotion

The concept of an 'emotion culture' (Shields & Koster, 1989) has been used by researchers to explore group norms related to the expression of emotion in such groups as medical students and college students. Verbal emotional expression is seen as particularly subject to group norms which are often established as an element of professional socialisation (Smith & Kleinman, 1989; Howell & Conway, 1990).

Coman (1993) has shown that a sample of Australian police officers did not tend to use emotion focused coping. The predominant coping strategies were avoidance focused, although "...many clearly feel a need to share their emotional experiences with fellow officers and others." (p.14). Pogrebin and Poole (1991) also found that police in Britain perceive their emotions as some sort of occupational weakness or hazard and do not express these feelings to other officers, thinking that they are alone in experiencing them. Police thus perceive emotional expression as a character flaw, leading to a "toughness ethic". Fear of not "measuring up" in the eyes of peers,

influences officers to block feelings in stressful situations (Mann & Neece, 1990) and to continue to suppress emotional reactions or feelings of distaste because, "part of their work is to be tough, to suppress emotions." (Gersons, 1989, p.252). The following quotations are examples from the reports of different clinical psychologists and psychiatrists who were asked to comment on their experience of professional involvement with members of the New Zealand Police (Miller & Ford, 1991).

"...the 'police ethos' that discourages admission of any difficulties in coping with work stresses, etc., and encourages the notion that problems should be worked out by the individual concerned."

"There seems to be an attitude amongst the workforce that only people who are somehow inferior or less able than their colleagues resort to speaking to psychologists or learning ways to manage stress effectively."

"It is characteristic of the majority of the members of the Police that they feel they have to be 'strong' and able to conquer the symptoms themselves."

"...police personnel are required to keep an image of appearing strong and macho, of there being no time to absorb the emotional impact of one difficult case before going on to another difficult case,... Common ways of coping with the emotional 'wear and tear' is to shut down and deny the emotional impact..."

According to many of these clinicians and other commentators on police behaviour in the USA or Britain (e.g. Graef, 1989; Joyce, 1989; Miller & Ford, 1991; Pogrebin and Poole, 1991) police officers most commonly manage the suppression of the emotional impact of events through the use of alcohol and humour. These social strategies diffuse the emotional impact but do not allow the feelings to be processed. The effect of police ethos is that "...talking about pain, guilt or fear has been considered taboo. If an officer has to talk about his/her personal feelings, that officer is seen as not really able to handle them..." (Pogrebin & Poole, 1991, p. 398).

Thus police coping strategies themselves may be hindering the therapeutic responses necessary for the recovery from adverse reactions to trauma and in this way social support in a cohesive work situation could even be encouraging the development of PTSD in some individuals. It is only a worker's willingness to risk self-disclosure that allows therapeutic support (McCammon, Durham, Allison & Williamson, 1988) and the prevailing attitudes of police 'culture' may not allow this. It is important to note here that, as Davidson and Veno (1980) have pointed out, police traits are developed by the work situation and therefore vary between cultures and between police forces in the same society. There is evidence from a range of countries that suggests that some generalisations may be made about the nature of police work, however, the potential for wide variations must be also taken into account. It seems likely that individuals in police groups that do have a strong 'toughness ethic', in which the expression and even the experience of emotion is denied, are likely to be more at risk for developing PTSD following traumatic experiences.

6.6 Attitudes Towards Professional Support

An allied concern, which may also be strongly affected by police attitudes to expressing emotions as a sign of 'weakness', is about attitudes towards seeking or accepting professional psychological help. The results of a study by Good, Dell and Mintz (1989) indicate that there is a significant relationship between concern about expressing emotion and negative attitudes towards seeking professional help among some men. As police organisations become increasingly aware of the destructive effects of traumatic stress on the long term health and length of time in the service of police officers, there is a corresponding growth of the provision of post-trauma debriefings and individual counselling services. However the effective use of these services depends upon the awareness of the needs of officers by their superiors, and according to Graef (1989) many senior officers are still ambivalent towards the very concept of stress. Pogrebin and Poole (1991) and Gersons (1989) both cite examples of senior officers who failed to respond to stress reactions in junior officers, by either ignoring them completely or misunderstanding their needs. Also, the acceptance of psychological counselling may be difficult for officers in stations that have a

prevailing 'toughness' ethos. They may believe that non-police personnel will not understand their problems or fear that job or promotional opportunities will be jeopardised (Coman, 1993); there is evidence that police officers are reluctant to make use of counselling services (Evans et al., 1992), scorning their efficacy and suspecting their confidentiality (Manolias, 1991). Once again the consultants who contributed to the Miller and Ford (1991) report share similar observations as in the following examples:

"Referral to helping agencies is considered a 'weakness' and a failure. The majority of the referred tried to fight their symptoms and would not consider asking for help for years."

"...there is a resistance on the part of officers themselves to seek such help because of their belief that an admission for help will be seen by their colleagues as a weakness"

There is evidence that there are gender differences in attitudes to counselling across many occupations (Fell, Richard & Wallace, 1980) indicating that women are more likely to use mental health services. Good, Dell and Mintz (1989) also found a significant relationship between elements of the male role and men's attitudes and behaviours related to seeking professional help. Whether there are such differences within police forces is not known, but with increasing proportions of women entering the service, gender may be an important variable.

6.7 Summary of Part One

Chapter one has outlined the need for investigations into the prevalence of trauma and health outcomes in the New Zealand police and introduced social support as an important factor in preventing psychological disorder. Chapter two presented an outline of theories of PTSD aetiology, focusing on those models that are able to include and explain social support as a moderator of the relationship between trauma and PTSD. The third chapter outlined approaches to the conceptualisation and

measurement of social support, especially in organisations. In this chapter evidence was presented and summarised for the approaches to measuring social support that best fit the PTSD model. The evidence suggests that perceived emotional support and in particular the opportunities to talk about traumatic experiences are the aspects of social support that meet the needs elicited by the traumatic experience. Chapter four presented and discussed the empirical evidence for a link between social support and PTSD and the evidence for a moderating relationship as suggested by the PTSD model. This evidence also included further endorsement for emotional support as the important aspect of support in relation to psychological health outcomes. Chapter five discussed the largely experimental evidence for a causal link between the disclosure of emotions and physical health outcomes. As the impact of trauma on physical and psychological health is closely related, this work is seen as further evidence for the beneficial effects of the disclosure of emotions following trauma, following the observations in PTSD research that talking about trauma is the helpful aspect of social support. In Chapter six the obstacles to the disclosure of emotions in social groups was discussed. In particular, this chapter focused on the reasons that opportunities for the sharing of emotions is likely to be restricted, and the attitudes towards the expression of emotions that have been found in police groups in particular.

The second part of this thesis will describe and discuss a study which was carried out to explore social support and trauma in the police, within the framework that has been described in part one. Chapter seven will introduce this study of social support as a moderator of work related trauma, including a description of other variables that are related to the experience of trauma in the New Zealand Police.

Chapter Seven

OBJECTIVES OF THE PRESENT STUDY

7.1 Chapter Overview

Chapter seven introduces part two of this thesis which is centred on the main study. Much of part one focused on the broader theoretical and empirical background to social support, and the physical and psychological health outcomes of trauma. Chapter seven will describe the objectives and hypotheses that are drawn from the model and rationale, which was presented and elaborated in part one. The objectives of the present study include a turn to focus more closely on the police as an occupational group. Therefore, chapter seven will also introduce the other variables that may be influencing social support, PTSD or physical health symptoms in this group. Some of these variables, such as gender, ethnic group, or rank, were touched on briefly in part one (in chapters three and six) and will be described more fully in this chapter. Physical health symptoms and their relationship to the PTSD diagnosis and the nature of the traumatic stressor, will also be described more fully here.

7.2 Measuring PTSD in the Police

7.2.1 PTSD symptoms

There is clinical evidence, mainly from psychologists who work with officers exiting from the New Zealand Police (Ford, 1993), that police officers are likely to suffer from many of the symptoms of PTSD. However, there is no detailed evidence of the incidence and prevalence of symptoms in working police officers.

The first research goal is to measure the prevalence of PTSD symptoms in a sample of New Zealand Police Officers.

7.2.2 Physical symptoms

There is a growing body of evidence that suggests that PTSD is often associated with other illness and disabilities such as alcoholism and drug dependence, somatisation disorder, anxiety disorders and major depression (Sutker, Uddo-Crane & Allain Jr., 1991). Stretch (1986) found that war veterans who suffer from PTSD were also likely to be in poorer physical health than their fellow veterans and Barrett and Mizes (1988) found PTSD symptoms associated with more physiologic complaints in another group of veterans. Because of the importance of the evidence linking trauma and physical health and the possible impact on police work of physical impairment, this study will focus on the links between physical health symptoms and PTSD. Although there are other incapacitating psychological and behavioural effects associated with the disorder, such as alcoholism or depression and anxiety, these diagnostic entities themselves are often manifested and measured in terms of somatic symptoms.

Researchers and clinicians working with PTSD sufferers are increasingly concerned with the importance of the relationship between physical symptoms and the diagnosis of PTSD and the need for further investigation into the clinical and theoretical implications (Burgess Watson, Wilson & Hornsby, 1992). De Loos (1990) reports that: "Psychophysiological effects of arousal and anxiety are core symptoms of all posttraumatic reactions. They often precede the psychiatric diagnosis of PTSD, presenting as "functional complaints"..."(p.97). According to de Loos, the signs and symptoms of a psychophysiological anxiety syndrome include: dizziness, blurred vision, pounding heart, irregular beats, hand tremor, headaches, muscle pains, digestive problems, and respiratory problems. Additional symptoms that have been associated with PTSD in other studies are ringing in the ears, rapid breathing, nausea and stomach cramps, skin conditions, and back pains (Burgess Watson et al., 1992; Litz, et al., 1992; Shalev, Bleich & Ursano, 1990). There is evidence that Vietnam Veterans with PTSD report more symptoms and health complaints than those with no PTSD symptoms, yet have no more medically diagnosed disorders (Centers for Disease Control, 1988; Litz et al., 1992; Shalev, et al., 1990). Litz and colleagues evaluate the possible reasons for these differences. They conclude that physical health

problems may be likely sequelae of long term adaptation to trauma and there is a firm basis for further research into the physical manifestations of PTSD syndrome including the parameters of a consistent cluster of health complaints associated with the syndrome.

The second research goal is to examine the relationship between the reporting of physical health symptoms and PTSD symptoms, and to examine the type of symptoms commonly reported by officers with higher PTSD symptoms.

The first hypothesis is that there will be a positive correlation between the reporting of physical symptoms and PTSD symptoms.

7.3 The Traumatic Stressors

The stressor is an essential aspect of PTSD diagnosis (American Psychiatric Association, 1994). The types and extremities of traumatic stress faced by police at work have been well documented, both as the results of quantitative surveys (e.g. Coman & Evans, 1991; Gudjonsson & Adlam, 1983; Martin, McKean & Velkamp, 1986) and as extensive qualitative descriptions (e.g. Graef, 1989; Kroes, 1972; Niederhoffer, 1969, Stratton, 1984). However the characteristics of experiences that are most likely to lead to the development of the disorder have not been detailed, although there are indications in the literature that there are two aspects of stressors that have a potential impact on outcomes.

First, the additive effects of a number of the same type or different stressors may increase a person's chances of developing PTSD. Greller et al. (1992) cites evidence in police and other occupations that shows that the effects of repeated experience of stressors are cumulative. Martin et al. (1986) found that symptoms of PTSD are most prevalent among those reporting chronic stresses of working with child abuse or spouse abuse cases or dealing with rape victims, as well as those who have suffered the more isolated crises such as shootings or being threatened.

The Martin et al. (1986) results include a second aspect that must be considered: the type of stressor that is more likely to lead to PTSD symptoms. Manolias and Hyatt-

Williams (1993) consider police shooting experiences to be one of the most likely to result in PTSD and the results of a survey by Sewell (1983) showed that violence or threat of violence ranked as among the most stressful events. This is related to evidence from studies of Vietnam Veterans in which the level of intensity of combat was consistently related to the incidence of PTSD (Barrett & Mizes, 1988, Green & Berlin, 1987; Norman, 1988; Solkoff, Gray & Keill, 1986). Other, anecdotal, evidence from police officers suggests that incidents involving children are particularly difficult to recover from.

A third aspect, that is not often considered, is the stressful events in an officer's life from outside police work that may contribute to PTSD symptoms. Research into the prevalence of PTSD in the general population of New Zealand has only just begun, but there are indications from surveys of populations in the United States that significant percentages of the general population are suffering from PTSD symptoms. A recent study (Norris, 1992) examined a sample of 1000 adults and found that 69% had been exposed to a traumatic event in their lifetime. The PTSD prevalence rate for the sample was 5.1% and lifetime frequencies ranged from 4.4% for sexual assault to 30.2% for tragic death. In evaluating the effects of different magnitudes of loss on 155 victims of a volcanic explosion, Murphy (1988) concluded that the strongest predictor of distress is prior stress. Findings such as these suggest that stressors from outside work may also contribute to the effects of work stress and must be taken into account.

The third research goal is to measure the number and types of stressors that police officers are likely to encounter, taking into account the additive effects of events and traumatic stress from outside police work.

The second hypothesis is that there will be a positive correlation between traumatic stressors experienced by police officers and their PTSD symptoms.

7.4 Demographic Variables

Demographic characteristics, representing the groups with which people are identified in a particular society may contribute to the appraisal and working through of a traumatic experience and impact upon the variations in development of subsequent disorders (Green, Wilson & Lindy, 1985). Smith and Ward (1986) have provided a theoretical background and empirical evidence for the impact of age, rank, education levels and race on the development of maladaptive behaviour in stressful situations by police. The variables that have been shown to have associations with stress reactions or some impact on PTSD symptoms are outlined in more detail below.

7.4.1 Gender

The proportion of women officers in the New Zealand Police is currently 10% (Buchanan, 1994). Brown and Feilding (1993) report that policewomen in a British sample were more likely, than male officers, to report felt stress associated with their operational deployments. In a general sample, Norris (1992) found that women who had suffered from crimes showed a rate of PTSD more than twice that of men. Green (1994) also cites evidence that points to gender as a risk factor for PTSD given exposure to a traumatic event. However, there is evidence that men and women have differing needs for social support (see Chapter three). Ogus (1990) has also suggested that women use family and work support more effectively in the face of work stress. Therefore gender differences may affect both reactions to traumatic stress and the subsequent impact of available social support.

7.4.2 Education

There is evidence that the higher the level of education of a person, the better their adjustment following a disaster (Norris, 1992). Education is also often regarded as a surrogate measure for socio-economic status (McIntosh, 1991) which in turn may impact on the appraisal of stress and subsequent reactions. In a New Zealand community sample of Vietnam veterans (Vincent, Long & Chamberlain, 1991) it was found that education level was a significant predictor of PTSD score with higher levels of education associated with lower PTSD scores.

7.4.3 Age and length of service

There are mixed indications for the possible impact of age on PTSD in the police. In Norris' (1992) general population sample older persons showed consistently lower rates of PTSD across all types of traumatic events. However, younger police officers may be more willing to share their emotional experiences and longer experience in the police force has been shown to decrease disclosure (Parker & Roth, 1973). According to other predictions made in the present study this could increase PTSD levels. In terms of physical health outcomes, Ottmann, Karvnen, Schmidt, Knauth and Rutenfranz (1989) found mixed results for police officers; some symptoms increased with age while others decreased, regardless of levels of the stressor. The appraisal of stress in relation to age may also be related to the rank achieved in relation to years of service (Burke, 1989).

7.4.4 Rank

At different levels of the police hierarchy the nature of the duties and their accompanying stressful impact changes. Police in supervisory roles experience higher levels of support and less stress than do non-supervisory officers (Kaufmann & Beehr, 1989). Brown and Campbell (1990) support previous findings that the sergeant rank is exposed to the highest overall levels of stress, while constables are exposed to the highest levels of operational (and more likely to be traumatic) stressors. Police constables who had higher years of service (i.e. had not advanced to higher ranks) were found to have the highest rates of psychosomatic and other physical symptoms in a sample of British police (Burke, 1989).

7.4.5 Ethnic group

Sutherland and Cooper (1988) suggest that ethnicity may affect the experience of work related stress. For example, Smith and Ward (1986) propose that African Americans in the United States have more problems in police roles due to cultural and ethnic conflict. This is possibly true for officers of different ethnic groups in New Zealand cities. There may be other differences between the major ethnic groups that result in varying reactions, as in Norris' 1992 findings that in the United States

African American men showed the strongest stress reactions to traumatic events.

7.4.6 Marital status

Marital status was also considered as a demographic variable because of its likely impact on sources of social support outside work. Although support at work is regarded as important (see Chapter three) there is evidence that for men in particular, having a supportive relationship with a spouse or partner is very important (Paton, 1994).

The fourth research goal is to examine the relationship between the demographic variables - gender, education, length of service, age, rank, ethnic group, marital status - and PTSD symptoms, in a sample of New Zealand Police officers. These variables will also be considered as covariates in any multivariate analysis.

7.5 Social Support.

7.5.1 Social support as a buffer between PTSD and trauma.

The model of PTSD aetiology outlined in Chapter two suggests that social support interacts with trauma in its relationship to PTSD outcomes. The buffering model of social support (House, 1981) describes a model in which the deleterious impact of stress on health is mitigated as social support increases, and conversely, that support will have its strongest beneficial effect on health among people under stress. Thus, according to a buffering hypothesis, the relationship between job stressors and individual strains depends upon the amount of social support, which is an interaction effect.

Cohen and Wills (1985) offer a theoretical model of stress-support specificity (see Chapter three), suggesting that the coping requirements elicited by a stressful experience are peculiar to the nature of the stressor. Because traumatic events are a specific type of stressor it is appropriate to isolate the functions of social support that are specifically related to the needs elicited by the experience of trauma. The coping ability that would be supportive in the case of trauma is apparently the need to talk

about the experience and to express emotions connected with it.

7.5.2 Approaches to emotional social Support

There have been a variety of approaches to the measurement of social support in the work place. The aspects of social support that fit the buffering hypothesis and are specifically appropriate to the needs elicited by traumatic experiences will be examined and compared. Four aspects of social support measurement have been suggested by the literature reviewed in Chapters three to six.

i. Functional Support from Peers, Supervisors and Family.

According to Cohen and Wills' (1985) model of stress-support specificity, it is important that the coping requirements elicited by a stressful experience are assessed and the effects of support are specific to social circumstances. Hence the type of stressors and the sources of support must be taken into account for increased understanding of these effects. Peers and supervisors are two main sources of support for police officers at work and non-work sources must also be considered (e.g. McCarroll, Ursano, Wright, & Fullerton, 1993; Thompson, 1993). The evidence suggests that perceived functional support is the most appropriate approach to measurement and, from the typology of House (1981), emotional support is the most likely type to affect PTSD outcomes.

ii. Content of Communication at Work.

Beehr, King and King (1990), have suggested that one potential key explanation of diverse findings for the buffering effect of social support on stress is the variation in what people talk about at work. In other words, the content of communication could buffer the stress-strain relationship. In searching for the property of social support that moderates the relationship between trauma and PTSD it is appropriate to consider what people actually talk about at work, and how the possible topics of conversation affect health. Thus the content of communication between peers and between subordinate and supervisor will be considered as a specific property of emotional social support.

iii. Talking About Trauma.

A very specific aspect of social support in relation to trauma is talking about the trauma itself. The disclosure of traumatic experiences will be examined following the work of Pennebaker (e.g., 1993; see Chapter five) on the linguistic expression of trauma and physical health outcomes. People's perceptions of their ability to talk about their traumatic experiences at work will be examined to test the relationship of this aspect of perceived emotional support to PTSD symptoms.

iv. Attitudes to Expressing Emotion.

There is evidence that disclosure of emotion is the salient aspect of social support in relation to health outcomes but that it is difficult for many people to talk about their trauma. Studies show (see Chapter six) that police groups are socially constrained by cultural 'mores' and are very likely to have collective attitudes that operate against the expression of emotion (Pogrebin & Poole, 1991; Manolias, 1991). Evidence of 'reverse buffering' in which social support interacts with the stressor to the detriment of health outcomes, suggests that the support offered by networks in the work place can be harmful. In this way social support at work could even be encouraging the development of PTSD in some individuals. These attitudes may interact with trauma and emotional support at work to affect levels of PTSD symptoms.

7.5.3 Main effects of social support on PTSD

The model of PTSD aetiology that forms the basis of the present study depicts social support as a buffer for the effects of trauma on PTSD symptoms. However empirical research in this area has often found main effects for social support on psychological strains with or without interaction effects. Accordingly, it is likely that there will be main effects on PTSD for many of the social support variables, although these must be interpreted as conditional or average effects if there is an interaction effect between the same variables (Aiken & West, 1991).

The fifth research goal is to make comparisons of the four approaches to emotional social support described above in terms of: correlations with each other; any main effects of the various aspects of social support on PTSD; and social support as a moderator of the effect of trauma on PTSD symptoms.

The hypotheses in this area of investigation are:

1. Perceived emotional social support will be negatively related to PTSD symptoms.
2. There will be an interaction between attitudes towards expressing emotion in the work place and the other aspects of emotional social support in that, the negative relationship between social support and PTSD symptoms will be stronger if there is a positive attitude towards expressing emotion.
3. Perceived emotional support moderates the relationship between traumatic stressors and PTSD symptoms. The effect of this interaction is that if social support is low, there will be a positive relationship between trauma and PTSD symptoms. If social support is high, then this association will be weaker.

7.5.4 Differences in social support between stations.

It is likely that the New Zealand Police are not a homogeneous group and that there are differences in attitudes and social support functioning between smaller groups. These differences might occur between stations, in that the availability of social support reported by individuals reflects the social support available at their station. By comparing groups it is also possible to control some of the ambiguity concerning direction of effect that is associated with cross-sectional designs. In the case of PTSD it is very likely that suffering from psychological and physical health symptoms causes deficits in perceived social support. A strategy to help clarify this ambiguity is that of using PTSD sufferers to select work groups that are high or low on the dependent variable i.e. PTSD, and then excluding those classified as PTSD cases from the analysis. This helps to ensure that the measurement of the independent variables is not 'contaminated' by PTSD sufferers, i.e. by the variable they are supposed to predict, as only the perceptions of those without extreme symptoms will be used to evaluate the work group (see Hopkins, 1990).

The sixth research goal is to compare Police Stations on the basis of social support variables and PTSD symptoms while excluding PTSD sufferers.

The sixth hypothesis is that groups of police officers who report higher social support will also report lower PTSD symptoms.

7.5.5 Physical health as the dependent variable

It has been hypothesised that there is a strong relationship between PTSD symptoms and physical symptoms. Because of this relationship and previous work linking trauma, social support and physical health (see Chapter five), the social support variables will be tested with physical health symptoms as the dependent variable.

The seventh research goal is to examine the relationships between trauma, social support and physical health.

The seventh hypothesis is that social support is negatively related to physical health symptoms.

7.6 Summary of Hypotheses

1. There will be a positive correlation between the reporting of physical symptoms and PTSD symptoms.
2. There will be a positive correlation between traumatic stressors experienced by police officers and their reported PTSD symptoms.
3. Perceived emotional social support will be negatively related to PTSD symptoms.
4. The relationship between perceived emotional social support and PTSD will be moderated by attitudes towards expressing emotion in the work place.
5. Perceived emotional social support will moderate the relationship between traumatic stressors and PTSD symptoms.
6. Work groups of police officers who report higher perceived emotional social support will also report lower PTSD symptoms.
7. Perceived emotional social support will be negatively related to physical health symptoms.

Chapter Eight

METHOD

8.1 Research Design

This chapter will describe the methods used to test the hypotheses and meet the research goals of the present study. The previous research on which this study is based has generally taken the form of surveys using questionnaires or interviews. Therefore a survey format was chosen. The research goals were exploratory and some of the measuring instruments were new, therefore a cross-sectional design was chosen for the sake of relatively rapid feedback. For generalisability of initial results a sizeable sample was required, therefore a questionnaire was chosen as the most economical data collection instrument for this type of field research. A survey of a sample of officers from the New Zealand Police officers was carried out, and the rest of this chapter will describe the survey, the respondents, the procedure and the measures chosen.

8.2 Respondents

There were three groups included in the survey. First, a non-random sample (865) of all sworn police officers in one geographical section (Region 3) of the New Zealand Police. Secondly, a group of 96 officers who were randomly selected (by computer generated list) from a large metropolitan station in Region 4. Thirdly, 39 officers (selected by a personnel officer on the basis of availability) from another station in Region 4 were also sent questionnaires after a confusion in the distribution resulted in some of the questionnaires being returned as extras. In total 1,000 questionnaires were distributed. The different ranks, length of service, types of occupation, gender and age groups employed by the Police were represented in this

group. However, the ethnic mix in the area chosen may not be representative of regions throughout the country.

Within three weeks of the distribution of the questionnaire, 45% (448) of the questionnaires had been returned. At this point in time a reminder notice (see Appendix C) was sent to each station to be posted on the bulletin board and in the local newsletter. Following this time a further 8% (79) of the questionnaires were returned. The total return rate was 52% (527).

A further 9 questionnaires were returned unused. Five of these were accompanied by notes explaining that the respondent had already completed a questionnaire (probably in the pilot study). One return was accompanied by a letter explaining fully the respondent's lack of faith in the police administration's concern for officers and management's willingness to respond to the results of research. This distrust of the organisation was expressed by other respondents (including disbelief by some groups that the information would remain anonymous) and probably contributed towards the response rate. Other factors that contributed according to police officers who contacted the researcher were, a general dislike of filling in forms in a job that already requires a great deal of paper work, and expressed cynicism, especially among younger officers regarding the adverse effects of traumatic experiences.

8.3 The Measures

The questionnaire used in the main study is reproduced in Appendix D and comprises the following measures.

8.3.1 Biographic items.

A number of general items were used to record the age, gender, marital status, ethnic group, educational level, years with the police, job title and branch of police work of each respondent. Respondents were also asked if they had seen a psychologist or attended a debriefing through the NZ Police Trauma Policy. This was to provide information about this relatively recent support service.

8.3.2 Measuring posttraumatic stress disorder.

Of all the available instruments for assessing PTSD incidence by survey, the Mississippi Scale for Combat-Related PTSD (M-PTSD; Keane, Caddell & Taylor, 1986), has the strongest prior evidence of reliability and validity in making the classification of PTSD in several studies (McFall, Smith, Roszell, Tarver & Malas, 1990; Kulka et al., 1991; Kulka & Schlenger, 1993). However there is no such well tested instrument for use in non-military populations. The Civilian version of the Mississippi PTSD scale is now in use in several studies and is currently being evaluated (Green, 1991).

The content and the format of the Civilian Mississippi Scale parallel those of the military version of the instrument, and contains statements reflecting intrusive re-experiencing of the traumatic event, avoidance and emotional numbing, and persistent hyperarousal as well as the associated features of PTSD such as depression, suicidality and guilt (Vreven, Gudanowski, King & King, 1995). The respondents in the present study were requested to answer according to "...the way you have been feeling during the PAST MONTH,...". The past month is considered to be a time span that includes symptoms 'at present', and could also incorporate symptom free phases during which a person functions well, although underlying problems remain (Williams, 1993). The responses are across a 5 point Likert scale with response options worded appropriately for each of the 35 items. Lower values indicate no evidence of PTSD symptoms and higher values indicate the presence of symptoms (10 items are reverse scored). A total score is obtained by summing across the scores on all items with a possible range of 35 to 175 (the range was 45 to 161 in the present sample).

A recently published test of the psychometric properties of the Civilian Mississippi used with 668 civilians, (Vreven et al., 1995) reported acceptable reliability coefficients although lower than those generally reported for the M-PTSD. The mean item-total correlation was .39 and coefficient alpha was .86. The coefficient alpha estimate for the Civilian Mississippi used in the present study was .90 and this improved reliability may be explained in part by other findings from the Vreven et al. study. It was found that the Civilian Mississippi had the lowest measurement error

when assessing those whose symptom score is above the mean. This means that those whose symptom scores are at the higher end of the scale are more likely to be correctly identified and the scale will tend to be more precise in populations with higher PTSD scores. The range of scores for the Vreven et al. study was 37 to 124, with a mean of 64.31, whereas the mean for the present sample of police officers was 78.99 ($N = 508$).

Vreven et al. (1995) also found some problems concerning the validity of the scale. Certain groups of items are not consistent and may be ambiguous. The whole scale correlates more highly with measures of general psychological distress than with other measures of PTSD. Also, the factor structure of the Civilian Mississippi was found to have multiple dimensions rather than the proposed single second-order factor of the Military version. Although these issues must be addressed, the Civilian Mississippi seems at this early stage to have adequate reliability and validity for distinguishing between groups, especially those with higher symptom scores, although not for assigning individuals to categories. For this reason continuous symptom scores on the Civilian Mississippi are mostly used in the following analyses and any assignment to PTSD case groups interpreted with caution. In fact, Green (1991) has already pointed out that a diagnosis of the syndrome is a rather artificial distinction and recommends a broader conceptualisation of post-traumatic states, including co-morbid symptoms such as anxiety and depression, when assessing vulnerability or risk factors.

8.3.3 Measures of stressors.

When assessing the prevalence of PTSD, the presence of a traumatic stressor must always be confirmed (Hammarberg, 1992). Additional data was also needed to account for the effects of different types of trauma and the possible effects of repeated trauma. The traumatic stress schedule (Norris, 1990; Norris, 1992) was used as a basis for the collection of data on past traumatic events. The 9 items in this instrument were initially developed to examine the frequency and impact of nine types of traumatic events in a community sample. These nine events were included in the present study to assess and control for possible trauma experienced beyond work related trauma: *robbery, physical assault, sexual assault, tragic death, motor vehicle*

crash, combat, fire, natural disaster, other hazard. Five other items in the same format but relating specifically to police duties were added. These items were based on the circumstances listed by the NZ Police Trauma Policy for which mandatory debriefing is now required: *deliberate killing by police officers, deliberate or accidental death of a police officer, accidental death or injury of a member of the public by a police officer, work with victims of disturbing homicides, attendance at severe accidents, and disaster victim identification work*. An additional item was included, based on the work of Martin et al., (1986) and consultation with working officers, to measure ongoing or *chronic stressors*. The final item asks for any *other source of trauma* that the respondent has experienced. Each item includes information on repeated trauma, time since the event, and whether the event was before or outside of police work.

Different methods were used to calculate trauma scores, according to the aspects of the traumatic event being considered. To derive a simple *trauma* score (Trauma) the number of traumas experienced by the respondent was summed. To account for the effects of *repeated exposure to the same trauma* (Multiple Trauma), those traumas that were experienced more than once were multiplied by 2 to weight the contribution of that particular event to the final score. The resulting scores for each experience were again summed for a total score. To account for the possible effects of *time since the trauma* (Lifetime Trauma), the score for each traumatic experience was weighted according to the length of time since the event. Those events most recently experienced (less than 6 months ago) received the highest score (4) and those events experienced more than 5 years ago, received the lowest score (1). Once again the total for all events was summed. Separate scores were calculated for each respondent for those traumas experienced *before joining the police, after joining the police* and both *on and off duty* since joining the police (Trauma Before, Trauma After, Trauma On Duty and Trauma Off Duty). In all cases, higher scores on each traumatic event schedule was taken to indicate greater trauma.

This use of the Norris Inventory does not address the issue of differences in the impact of individual events as the main concerns of the present study were to assess

the cumulative effects of work related trauma on PTSD symptoms. To include the perceptions of the impact of an event, one item was added to the inventory. This item asked respondents to select the event which they considered had affected them the most.

8.3.4 Physical symptoms

i. *Physical symptoms* were measured with the Pennebaker Inventory of Limbic Languidness (PILL; Pennebaker, 1982), a 54 item self-report inventory which taps the occurrence of a large number of common physical symptoms and sensations. The instructions for the PILL were modified for use in the present study to match the time over which PTSD symptoms were assessed. Respondents were asked to "indicate how much each of the following problems have disturbed you during the last month" on a five point scale, from not at all to extremely. The measure was scored by summing items 1 - 54, so that the total score ranges from 0 to a maximum of 216 (the range in the present study was from 0 to 149). Using this scoring method, Pennebaker (1982) reports an alpha coefficient reliability estimate of .91, when the scale is used as a measure of a general proclivity for reporting physical symptoms. Pennebaker also reports good test-retest reliabilities and correlations with health-related work absences and physician and health care centre visits. The alpha coefficient for the present sample is .92 ($M = 23.84$, $SD = 18.45$, $N = 527$).

ii. *Self-rated health* was also assessed with a single question which asked respondents to rate their current health compared to a person in excellent health, over a seven point response scale from 'terrible' to 'excellent'. This measure has been shown to predict mortality above and beyond several other indicators of health, such as present health patterns, physical disability and biological or life-style risk factors (Idler & Kasl, 1991).

8.3.5 Measures of social support.

i. *Measuring perceived functional support.*

Four functional support items were used to directly assess the subject's perception of the level of both emotional and tangible (instrumental) support received. These items

were the same as those used in the Caplan et al. (1975) survey. This measure has been extensively used since its development and evidence suggests that the scales largely tap emotional supportiveness (LaRocco, House & French, 1980). The same four items were used to form 3 subscales to assess support from three sources: supervisor support, co-worker support, and support from family or friends.

According to Beehr et al. (1990) indirect support for the validity of the four item functional index comes from Cohen and Wills' (1985) conclusion that studies using compound but internally consistent functional measures of this type have provided evidence for the buffering model.

The internal consistency and reliability of the subscales have been repeatedly investigated and reports of coefficient alpha estimates range from .73 to .94 (e.g: Beehr, King & King, 1990; Ganster, Mayes & Fusilier, 1986; Jayaratne, Himle & Chess, 1988; LaRocco, House & French, 1980). Coefficient alpha estimates for the present study are within this range at .80 to .88 (see Table 2). As alpha is a function of both the average correlation among items and the number of items, Joyce and Slocum (1984) suggest that for scales with a small number of items, mean inter-item correlations are a better estimate of internal consistency. The mean inter-item correlations for the measures in the present sample are also acceptable; ranging from .50 to .61 (Table 2), these estimates exceed the minimum acceptable correlation suggested by Joyce and Slocum of .25.

Each item was measured on a 5-point Likert scale and each set of 4 items was summed into an index of support from that source. The possible range of scores was from 1 to 5 with higher scores indicating stronger perceptions of support. The means and standard deviations for the three measures of social support from the present sample are reported in Table 2.

Table 2
Mean Inter-item Correlations, Alpha Coefficients, Means and Standard Deviations for Social Support from Peers, Supervisor and Family. (N = 517)

Social Support	Inter-item Correlation	Alpha	Mean	SD
Peers	.50	.80	3.16	.76
Supervisor	.65	.88	3.28	1.00
Family	.61	.86	4.09	.85

ii. *Measuring the Content of Communication.*

This measure was based on that developed by Beehr et al. (1990) specifically to measure the contents of communications as potential forms of social support between supervisors and subordinates in a work context. The results of the Beehr et al. survey supported a three-form typology of contents of communications: positive job-related, negative job-related, and non-job-related communications. This factor structure was also replicated using a different sample (Fenlason, 1988, cited in Beehr et al., 1990).

The scale was extended for the present study in two ways. First a second source of support was measured so that the items were presented twice: once in regard to supervisors and once in regard to the contents of communication with co-workers. Second, following the rational approach used by Beehr et al. (1990), three items were added to each scale to test for a further type of content of communication: communication about disturbing incidents at work (distress).

The resulting two sets of 15 items, designed to measure the content of communication of respondents with their peers and supervisors respectively, were factor analyzed. Beehr, King and King (1990) had demonstrated homogeneity for the three subsets of items on their original sample of nurses, and the aim of the present analysis was to ensure replication for these three subsets across two source of support and to test the validity of the fourth subset. The method of extraction was principal components

with varimax rotation (SPSS/PC); components with eigenvalues greater than 1.00 were extracted; those variables with loadings greater than .45 were included (Tabachnick & Fidell, 1989). When the contents of communications with peers was tested, varimax converged in 6 iterations of a four component solution which accounted for 62.1% of the total variance. All variables were simply related to the component corresponding to each expected domain of communication and the results of this analysis are shown in Table 3. The same method was used for the second measure of content of communication with the supervisor. In this case three components, accounting for 63.2% of the variance, were extracted and varimax converged in 5 iterations. The items related to communications about disturbing incidents at work loaded onto one component with items concerning negative communications (see Table 4). Although these two domains are closely related, there was also a differential pattern in the component correlations of the two sets of items. Therefore these items were kept as a separate subscale, which is consistent with the peer communication subscales. (These results support those of Beehr et al. (1990) who used an oblique rotation procedure in their analysis. The present analysis was therefore repeated using oblimin (delta 0), which allows the variables to be correlated. The resulting component structure was the same as that for varimax rotation).

The content of communication indices were accordingly formed by computing the mean item score for each of the four subsets of items: Non-job communications, negative communications, positive communications and communications about disturbing experiences. The scores on each index ranged from 1 to 5. There are four indices for each source of communication (peers and supervisors) and eight content of communication indices in total.

Coefficient alpha reliability estimates for the three indices across two studies reported by Beehr et al. (1990) ranged from .75 to .93. Reliability estimates for the present study were comparable, ranging from .73 to .89. The mean inter-item correlations for the scores on the content of communication subscales ranged from .43 to .73. The alpha reliability estimates, mean inter-item correlations, means and standard deviations for each subscale in the present study are reported in Table 5.

Table 3
Loadings on Four Components and Communalities (h²) for Principal Components Extraction and Varimax Rotation of 15 "Content of Communication with Peers" Items (N = 527).

Items	Loadings				h ²
	Non-Job	Negative	Positive	Distress	
We discuss things that are happening in our personal lives	.73	.02	.10	.29	.65
We talk about off-the-job interests that we have in common	.73	.04	.25	.03	.61
We share personal information about our backgrounds and families	.78	.02	.02	.22	.67
We talk about off-the-job social events	.72	.18	.33	.03	.67
We talk about how we dislike some parts of our work	.06	.73	.02	.28	.62
We talk about the bad things about our work	.08	.78	.03	.27	.70
We talk about problems in working with the public	.05	.66	.10	.20	.50
We talk about how this station is a lousy place to work	.00	.64	.30	.16	.53
We talk about the good things about our work	.16	.07	.80	.08	.69
We share interesting ideas about police work	.07	.13	.74	.05	.58
We talk about how this station is a good place to work	.02	.27	.62	.34	.59
We talk about the rewarding things about being a police officer	.15	.13	.64	.24	.52
We talk about jobs that have been personally distressing	.22	.19	.18	.75	.69
We discuss parts of the job that have been upsetting	.11	.32	.14	.72	.66
We discuss situations on the job that have been terrifying	.08	.15	.23	.73	.63
Eigenvalue	4.26	2.38	1.62	1.02	
Cumulative % Variance Accounted For	28.40	44.40	55.20	62.10	

Table 4
Loadings on Three Components and Communalities (h^2) for Principal Components Extraction and Varimax Rotation on 15 "Content of Communication with Supervisor" Items (N = 527).

Items	Loadings			h^2
	Negative	Positive	Non-job	
We discuss things that are happening in our personal lives	.18	.22	.76	.65
We talk about off-the-job interests that we have in common	.13	.17	.81	.70
We share personal information about our backgrounds and families	.18	.20	.81	.72
We talk about off-the-job social events	.18	.30	.73	.65
We talk about how we dislike some parts of our work	.81	.14	.17	.71
We talk about the bad things about our work	.85	.09	.11	.74
We talk about problems in working with the public	.61	.27	.12	.45
We talk about how this station is a lousy place to work	.70	-.24	.08	.56
We talk about the good things about our work	.16	.73	.27	.64
We share interesting ideas about police work	.13	.72	.16	.56
We talk about how this station is a good place to work	.03	.79	.19	.66
We talk about the rewarding things about being a police officer	.13	.77	.24	.67
We talk about jobs that have been personally distressing	.56	.37	.37	.63
We discuss parts of the job that have been upsetting	.60	.26	.26	.61
We discuss situations on the job that have been terrifying	.53	.21	.21	.53
Eigenvalue	6.23	1.96	1.29	
Cumulative % Variance accounted for	41.50	54.60	63.20	

Table 5
Mean Inter-item Correlations, Alpha Coefficients, Means and Standard Deviations for the Sub-scales of Peer and Supervisor Content of Communication (N = 524).

Peer Communication	Inter-item Correlation	Alpha	Mean	SD
Non-job	.50	.80	3.13	.71
Negative	.43	.73	3.18	.63
Positive	.47	.78	2.97	.62
Distress	.60	.81	2.68	.71
Supervisor Communication				
Non-job	.65	.88	2.36	.73
Negative	.57	.84	2.41	.72
Positive	.61	.86	2.66	.71
Distress	.73	.89	2.11	.73

iii. *Measuring Attitudes to Expressing Emotion.*

For the purposes of comparing behavioural attitudes to expressing emotion, an exploratory scale specifically related to police work was created for the present study. This scale comprises four items and respondents were asked to choose, from three alternatives on each item, the way that they would most likely react at their place of work. Two of the items are about emotions the individual feels that they would be able to express and two items concern their probable reactions to others' expression of feelings. The examples used are based on typical incidents and the reactions of police officers described in the literature (Kroes, 1972; Manolias, 1991; Pogrebin & Poole, 1991; Stratton, 1984). The three possible responses to each item range from acceptance of the expression of personal emotions (score = 2), through avoidance techniques such as humour and more acceptable emotions such as generalised anger (score = 1), to physical avoidance and suppression of feelings (score = 0). Scores on each item were summed to provide an expression of emotion index for each individual. Higher scores indicate greater acceptance of the expression of personal emotions at work.

The reliability estimates for this scale are low. Coefficient alpha estimate is .52 and the mean inter-item correlation is .23 which is below the minimum of .25 recommended by Joyce and Slocum (1984) as acceptable. However, the simple correlations among variables in the present study showed that the Attitude scale was significantly and positively related to other theoretically related aspects of social support such as talking about traumatic experiences ($r(438) = .33, p < .001$), and distress related content of communication ($r(438) = .2, p < .001$). Attitude was also significantly and negatively correlated to scores on the Civilian Mississippi ($r(438) = -.22, p < .001$) and the PILL ($r(438) = -.17, p < .001$). As low reliability attenuates observed correlations (Nunnally & Bernstein, 1994) and this effect is compounded in the use of product terms (Jaccard, Turrissi & Wan, 1990), any estimates of correlations and regressions using product terms that include these measures will be conservative. Aiken (1994) notes that modest reliability coefficients are sufficient for comparing groups and Nunnally and Bernstein suggest that reliability coefficients as low as .50 are acceptable for investigative research purposes. Owing to the initial support for the construct validity of the Attitude scale, it was retained for further analysis and investigation, although any results from analyses including this scale are to be interpreted with additional caution regarding the inconsistency of the measure. The mean score in the present sample was 4.91 ($SD = 1.47, N = 506$).

Informal observation of the results from the pilot study (see Appendix A) revealed that the responses to the items on the Attitude scale appeared to be divided into two, i.e. the responses to the items measuring attitudes to others expressing emotion varied systematically with the responses to items measuring the respondents willingness to express emotion. This observed split was tested on the sample in the present study and it was found that these two halves of the scale were significantly related, $\chi^2(16) = 38.03, p < .01$) but in a negative direction. Those who scored positively on attitudes to others expressing emotion were likely to score lower on willingness to express themselves. To maintain reliability the items were used as a single measure.

iv. *Talking About Trauma.*

The specificity hypothesis of social support (Cohen & Wills, 1985) suggests that buffering of stress against strains occurs when there are links between the needs elicited by the stressor and the aspect of social support provided. Studies by Pennebaker (1993) demonstrate a strong link between the opportunity to express the emotional details of traumatic experiences and health outcomes. In the light of these findings, two items were added, to supplement the social support measures by adding specific information regarding talking about trauma in the work place. At the end of the study the respondents were asked to rate how easy it is to talk about traumatic experiences - both details and feelings - at their work place. The mean score of talking about details was higher than that of talking about feelings ($t(514) = 11.79$, $p < .001$), indicating that in general officers find it easier to talk about the details of their experiences, than about their feelings about those experiences. The two items were also well correlated ($r(515) = .69$, $p < .001$) and so were combined into one measure named "Talk", which was negatively correlated to scores on the Civilian Mississippi, $r(506) = -.39$, $p < .001$). The ratings were made on a three point scale over two items, giving a total possible score ranging from 0 to 4. The mean score in the present sample was 1.85 ($SD = 1.22$, $N = 515$) with a coefficient alpha of .81.

8.4 Procedure

The questionnaire, accompanying letters and method of distribution and retrieval of information was approved by the Massey University Human Ethics Committee. All guidelines of the New Zealand Psychological Society were observed.

A pilot study to test the questionnaire and its acceptability to the respondents was carried out on 21 officers at 2 police stations in the Palmerston North District. As a result of this study the PTSD measure used was changed to the Civilian Mississippi and the new measure tested on the same officers. For details of the results of the pilot study and the changes see Appendix A.

To introduce the main study to the commanding officers who would be involved, the researcher addressed a meeting of the Commanders for all Districts in Region 3 to explain the purposes of the study and to answer questions. The support of the New Zealand Police Association (union) was also sought from the president and an article introducing the study to all members was subsequently published in the Police Association newsletter.

A questionnaire (see Appendix D) was distributed to each officer in the 60 stations of Region 3, and to 138 officers in two stations in Region 4, by internal mail. Each questionnaire was accompanied by the same covering letter and information sheet explaining the purposes of the study and the rights of the respondents (Appendix C). It was made clear that participation was totally voluntary, but would be helpful for the purposes of the research. The questionnaire was also accompanied by a sealable freepost envelope addressed to the researcher, to be returned by public post. In the information sheet the point was emphasised that no other police personnel would see the information if it was returned directly in this way.

Chapter Nine

RESULTS

9.1 Analyses

The statistical package, SPSS/PC (Norusis, 1988) was used to evaluate the data and relationships among the variables. Analysis was undertaken in three main stages:

1. To test the first and second hypotheses and to examine the relationships among the variables a series of descriptive and inferential analyses was carried out. These included correlations, ANOVAs and t-tests.
2. To test the third, fourth and fifth hypotheses, the social support variables and control variables including trauma were regressed on the total Civilian Mississippi score. Product terms were created and forced into the regression equation to test the predicted interactions.
3. The sixth hypothesis was tested by regressing the same variables on the measure of physical symptoms (the PILL), and entering product terms to test for interactions.
4. Predicted differences between a group of officers working in stations with high mean Civilian Mississippi scores and a group in stations with low mean Civilian Mississippi scores were examined with ANOVAs to test whether the officers' perceptions of social support were different between stations with high and low PTSD incidence.

For the following analyses an alpha level of .05 was set. Two-tailed *p* values are also reported for probability levels lower than .05.

9.1.1 Data screening

Prior to the main analyses the data was screened for accuracy of data entry, missing values, and the fit of variable distributions to the assumptions of the analyses.

Univariate distributions showed that all the variables were normally distributed except for the PILL which was positively skewed (skewness = 1.97, kurtosis = 6.82). For use as a dependent variable in multivariate analysis it was transformed by square root which improved normality (skewness = .44, kurtosis = .88).

Missing cases were randomly distributed across the variables and were left as missing for the initial univariate analyses. As some cases with missing variables were deleted in most analyses, the numbers of cases vary and *N* is reported for each separate analysis.

In the regression analyses, the missing cases were replaced with the mean for that variable. This was done to retain the remainder of the information from those cases. Eleven cases were excluded from the regression analyses because they were multivariate outliers. The details of these outliers are reported with the appropriate analyses. These cases were retained for the univariate analyses because their extreme status would not affect the results of these analyses. As many of these cases were extreme scorers on the PTSD instrument, it was felt that this information was too valuable to exclude from the initial correlations and ANOVAs.

9.2 Sample Description

Summaries of biographic and police service information for the present sample are provided in Tables 6 and 7. Each item was not answered by all respondents, so the numbers range from 515 to 526. All current police statistics reported for comparisons were provided by New Zealand Police and are current at June 19, 1995.

The age range (21 to 62) of the total sample (35 years) reflects the range (20 to 65) of all sworn staff of the New Zealand Police ($N = 6925$). Length of service is very similar in both cases: 84% of officers in the NZ Police and in the sample have served between 1 and 20 years and 17% between 21 and 30 plus years. Rank of officers in the sample also reflects the distributions for the Police in general (Constables and below, 71%, Sergeants and Detectives 25% and Inspector and above 4%). However Branch membership is not quite so well represented. The percentages for each branch for the NZ Police are: general duties, 71.4%; CIB, 13.4%; and Traffic Safety, 15.2%. The present sample has more members of the CIB and fewer Traffic Safety officers.

Only 11% of the sample are female but this reflects the percentage of women officers currently in Region 3 (10.3%) and in the New Zealand Police (12.6%). Such an uneven split on a dichotomous variable deflates its relationship with other variables in the subsequent analyses but this variable was retained. First because of its theoretical importance and second because the ratio of females to males is still higher than the 1 to 10 split recommended as minimally acceptable for multivariate analysis by Tabachnick and Fidell (1989). Overall this sample is very similar in composition on the variables above to the distributions in the NZ Police.

When questioned about their ethnic group, 87.7% of respondents identified as European New Zealanders. Forty two (8%) identified as Maori and five of these respondents identified themselves as both Maori and European. One percent identified as Pacific Islander and three percent as belonging to other races. There are no police records of ethnic groups among officers, but it is likely that these proportions are not representative of police groups in other parts of New Zealand. The percentage of any group other than Europeans was below 10% (Tabachnick & Fidell, 1989) and these groups could not be meaningfully combined. Therefore ethnic group was not included as a variable in further analyses.

Marital status statistics for the New Zealand Police are not currently available but in the present sample the highest proportion of officers are married or living in a permanent relationship (76%). Educational qualifications data is also not available for the Police in general. In the present sample 10% reported no qualifications, 68% had school qualifications and 22% reported at least one type of tertiary qualification.

Twenty three percent had attended a trauma policy debriefing and 13% had seen a psychologist; 25 respondents (5%) had done both.

Table 6
Summary of Biographic Information.

Variable	N	Percentage
Age	524	(<i>M</i> = 35.22)
21 - 31	194	37.0
32 - 41	210	40.1
42 - 51	99	18.9
52 - 62	21	4.0
Gender	526	
Male	468	89.0
Female	58	11.0
Marital Status	526	
Never Married	76	14.4
Married	402	76.4
Separated	47	8.9
Widowed	1	0.2
Ethnic Group	526	
Maori	42	8.0
N.Z. European	462	87.8
Pacific Island	6	1.1
Other	16	3.0
Education	526	
No School Qualifications	54	10.3
School Certificate	149	28.3
UE and above	207	39.4
Certificate or Diploma	78	14.8
University Degree etc	38	7.2

Table 7
Summary of Police Service Information

Variable	Number	Percentage
Length of Service	515	(<i>M</i> = 11.66)
1 - 10 years	281	54.6
11 - 20	152	29.5
21 - 30	64	12.4
31 - 38	18	3.5
Station by Size	526	
1 person	11	2.1
2 - 5	66	12.5
6 - 20	115	21.8
21 - 100	174	33.0
> 100	160	30.5
Rank	524	
Constables	380	72.5
Sergeants	130	24.8
Inspectors and above	14	2.7
Branch	525	
General Duties	365	69.5
CIB	115	21.9
Traffic Safety	45	8.6
Trauma Policy Debriefing	525	
Yes	121	23.0
No	404	77.0
Consulted a Psychologist	526	
Yes	68	12.9
No	458	87.1

9.3 PTSD Symptoms in the Present Sample

The first research goal was to measure the prevalence of PTSD symptoms in a sample of New Zealand Police Officers. The scores on the Civilian Mississippi ranged from 45 to 161, with a mean score of 78.99 ($N = 508$; $SD = 15.77$). This is very similar to the mean score found by Eustace (1994) using a sample of civilian New Zealanders who had experienced a natural disaster (Cyclone Bola). In her study the mean score on the Civilian Mississippi was 78.24 ($N = 111$; $SD = 16.12$) and the range was 45-154.

To identify respondents as PTSD cases (rather than treating the measure as a continuous score on symptoms), two cut-off scores were used. There is a range of scores that have been used as cut-offs to identify PTSD cases on the Military Mississippi (see Watson, 1990). Two scores were chosen for use in the present study for two different purposes. The cut-off chosen for comparison with other samples was the score of 102 recommended by Watson (1990) as the most appropriate for use on non-clinical samples. The second was to be used to select cases for exclusion from multivariate analysis (described in detail below). For this purpose, the less conservative cut-off of 94 recommended by Schlenger^{and} Kulka (1987, cited in Watson, 1990) was used.

Note that these scores are based on the Military Mississippi and there has been little published work to date employing the Civilian version of the Mississippi Scale and less use of cut-off points to identify respondents with high scores as PTSD cases. A recent study (Eustace, 1994) resolved the problem, of the differences between the Military and Civilian versions of the Mississippi Scale, by calculating the number of standard deviations away from the mean for two cut-off scores that had been used for the Military version of the scale and applying the same number of standard deviations to a community sample of respondents to the Civilian Mississippi. These calculations were made using data from a New Zealand community sample of veterans (Long, Chamberlain & Vincent, 1992; Vincent, Long & Chamberlain, 1991) and based on the recommended cut-off scores from Watson (1990) and Schlenger and Kulka (1987,

cited in Watson, 1990) of 94 and 102. This was done with the approval of the author of the scale (T. M. Keane, personal communication, December, 1993). When this method was applied to the present sample the resulting cut-off scores were 96 ($z = 1.07$) and 103 ($z = 1.52$); the same cut-off scores which Eustace had calculated using her 1994 sample.

At the least conservative cut-off score of 96, 69 respondents were classified as PTSD cases (13.6%, $N = 508$). At 103, 36 were cases (7.1%, $N = 508$). In comparison with these findings Long et al. (1992) found that 12% of a community sample of Vietnam Veterans, were classified as cases using a cut-off of 102 on Military Mississippi scores. Eustace (1994), using a cut-off of 103 on the Civilian Mississippi found that 8% of a sample of people who had experienced a cyclone were classified as cases, and 11.8% of the same sample were classified as cases using the 96 cut-off score. Norris (1992) reported prevalence based on findings from a U.S. community sample of 7-11% for those who had been exposed to violent crimes, deaths or accidents and 5-8% among those who had been exposed to environmental hazards. Norris' findings were based on a different measure of PTSD symptoms but she reported that these rates are in accord with those found by other researchers.

9.3.1 PTSD symptoms and demographic variables

The participants in this sample were measured on a number of demographic variables for theoretical or practical purposes. These were: age, gender, marital status, ethnic group, educational qualifications, length of service, rank, detective qualification, branch of service, attended a debriefing, and consulted a psychologist (see sample description above).

One way ANOVAs were conducted on all the dichotomous and nominal variables with Civilian Mississippi scores as the dependent variable. There were no significant differences between the groups on gender, marital status, ethnic group, or rank. The only significant difference between groups was for levels of educational qualifications, $F(2,504) = 3.15, p < .05$; the branch of the organisation, $F(2,503) = 4.68, p < .01$; and

for visits to a psychologist, $F(1,503) = 72.49, p < .001$. Those with no educational qualifications had higher mean Civilian Mississippi scores than those with school qualifications or higher. Both the traffic safety branch and the CIB showed higher mean levels of Civilian Mississippi than the general duties branch. As would be expected, those who had higher mean Civilian Mississippi scores were more likely to have seen a psychologist.

Two way ANOVAs were also conducted between the variables to test for second order interactions. Only branch membership and seeing a psychologist showed a significant interaction, $F(1,386) = 4.54, p < .05$. Examination of the means showed that officers in the CIB who had not consulted a psychologist tended to have higher Civilian Mississippi scores than those in other branches who had not consulted a psychologist. However, of all those who had consulted a psychologist, members of the CIB had lower mean Civilian Mississippi scores.

Interval level variables (age and length of service) were tested for simple correlations with the Civilian Mississippi. Length of service was weakly but significantly correlated with Civilian Mississippi scores ($r(496) = .15, p < .01$). As would be expected length of service was strongly correlated with age ($r(496) = .81, p < .001$), although age was not significantly correlated with Civilian Mississippi scores.

9.3.2 Physical symptoms

The second research goal was to examine the relationship between the reporting of physical health symptoms and PTSD symptoms. Scores on the PILL ranged from 0 to 149 with a mean of 23.84 ($SD = 18.45, N = 527$). The simple correlation of the Civilian Mississippi to scores on the PILL was $r(508) = .63, p < .001$.

To examine the numbers and types of symptoms that were more likely to be associated with higher PTSD symptoms, the respondents were classified as PTSD cases if they scored 103 or above on the Civilian Mississippi, the cut-off score recommended by Watson (1990) as most appropriate for non-clinical samples. The

mean score on the PILL for these two groups was 55.58 for cases and 21.51 for non-cases and these are significantly different, $t(506) = 12.05$, $p < .001$. When the 36 cases and 472 non-cases were compared according to the 10 symptoms most frequently reported by each group, it was found that the types of symptoms reported were very similar (see Table 8). However there are marked differences in the frequency of symptom reporting. For example insomnia is reported by 91.7% of the PTSD cases but by 46.8% of the non-cases. The higher reporting of insomnia by PTSD cases is understandable as this is a symptom commonly associated with PTSD itself, however all other symptoms were also reported at higher rates. The most commonly reported symptom for non-cases was back pains at 62.9%. and this is lower than the 66.7% of PTSD cases who report the tenth most common symptom.

Table 8
The 10 Symptoms Reported Most Frequently by PTSD Cases and Non-PTSD Cases as a Percentage of Total Respondents in Each Group.

PTSD cases (n = 36)		PTSD Non-Cases (n = 472)	
Symptom	%	Symptom	%
Insomnia or sleep problems	91.7	Back pains	62.9
Headaches	83.3	Headaches	60.4
Back pains	80.6	Running nose	59.5
Stiff muscles	77.8	Congested nose	58.1
Itching or painful eyes	77.8	Stiff muscles	51.1
Sensation of pressure in head	75.0	Sore muscles	49.6
Sore muscles	75.0	Coughing	48.5
Stiff joints	69.4	Insomnia	46.8
Eyes water	69.4	Sneezing spells	46.0
Upset stomach	66.7	Sore throat	43.9

Not only were cases more likely to report symptoms but they are also more likely to rate them as more severe. The groups of cases and non-cases were compared according to the 10 symptoms most frequently reported as severe (problems that have disturbed quite a bit or extremely during the last month). Once again the symptoms themselves were not markedly different but the percentage of cases who reported each symptom as severe was higher than those of non-cases (see Table 9).

Table 9
The 10 Symptoms Reported Most Frequently as Severe by PTSD Cases and Non-PTSD Cases as a Percentage of Total Respondents in Each Group.

PTSD cases (n = 36)		PTSD Non-Cases (n = 472)	
Symptom	%	Symptom	%
Insomnia	50.0	Back pains	16.7
Back pains	47.2	Congested nose	14.4
Itching or painful eyes	41.7	Running nose	10.4
Sneezing spells	30.6	Insomnia or sleep problems	9.3
Upset stomach	30.6	Coughing	8.7
Headaches	30.6	Headaches	8.1
Sensation of pressure in head	30.6	Itching or painful eyes	8.1
Indigestion	27.8	Upset stomach	6.8
Stiff muscles	25.0	Sneezing spells	6.6
Running nose	25.0	Temporary deafness	5.9

Self rated health was also compared to the PILL and Civilian Mississippi scores. Scores on self rated health for the whole sample ranged from 1 (terrible) to 7 (excellent), with a mean of 5.31 ($SD = 1.03$, $N = 525$). The simple correlation of self rated health and the Civilian Mississippi was $r(501) = -.45$, $p < .001$, and with the PILL, $r(501) = -.48$, $p < .001$. Self rated health distributions for the case and non-case groups were quite different with cases rating their health as much poorer than non-cases. As Table 10 shows, the range of ratings for non-cases does not include ‘excellent’ and the range for cases does not include ‘terrible’; the mode is at ‘fair’ for non-cases but ‘good’ for cases.

Table 10
Percentage of PTSD Cases (N = 36) and Non-PTSD
Cases (N = 472) by Self-rated Health.

Rating	PTSD Cases	Non-PTSD Cases
Excellent	0.0	9.8
Very good	11.1	40.4
Good	27.8	33.2
Fair	33.3	14.0
Poor	16.7	1.9
Very poor	8.3	0.6
Terrible	2.8	0.0

9.4 Traumatic Experiences.

The third research goal was to measure the number and types of stressor that police officers are likely to encounter, taking into account the additive effects and traumatic stress from outside police work. A positive correlation between traumatic stressors experienced by police officers and their PTSD symptoms was predicted.

As described in Chapter eight, the number of traumas experienced by officers was measured as Trauma, more than one experience of the same trauma as Multiple Traumas, and the differences in time since the trauma as Lifetime Trauma. Separate scores were calculated for those traumas experienced before joining the police, after joining the police (Trauma Before and Trauma After) and both on and off duty since joining the police (Trauma On Duty and Trauma Off Duty). Table 11 shows the simple correlations of these variables with each other and with the Civilian Mississippi scores.

Trauma experienced before joining the police was not significantly correlated with Civilian Mississippi scores. In addition there were only two significant correlations (Trauma, $r = .14$, and Trauma After, $r = -.23$) for this variable with the other trauma measures. In contrast, trauma after joining the police was very highly correlated with each of the other trauma variables ($r = .82$ to $.92$) and significantly correlated to the Civilian Mississippi scores ($r = .31$).

Trauma experienced while off duty was significantly related to the other trauma variables ($r = .21$ to $.62$) and weakly but significantly related to Civilian Mississippi scores ($r = .17$). However, trauma experienced on duty as a police officer is more highly correlated to the other trauma variables ($r = .76$ to $.87$) and more strongly correlated to Civilian Mississippi scores ($r = .29$).

Most correlations between the trauma variables were in the expected direction and the differences in magnitude were as expected, according to the aspect of trauma being measured. Only the negative relationship between Trauma After and Trauma Before

was not anticipated.

When the correlations with the Civilian Mississippi measure were examined it was found that no method of calculating the impact of trauma was any better than simply summing the number of traumatic experiences (Trauma $r = .31$, others $r = .16$ to $.31$). Only Multiple Traumas and Lifetime Trauma achieved comparable magnitudes ($r = .31$).

The correlations with Civilian Mississippi scores were of moderate strength and significant (except Trauma Before). Accordingly Trauma was the variable chosen for entry in all subsequent analyses. The use of the number of traumas as a predictor variable is supported by the results of Vrana and Lauterbach (1994) who found that the number of traumatic events experienced was significantly associated with increased scores on the Civilian Mississippi and one other measure of PTSD symptomatology.

An outlier that should be noted here is a respondent who scored low on trauma measure (4) but high on the Civilian Mississippi (114). An examination of the traumatic experiences of this respondent showed that they included sex by force and assault or life under threat (which is also recorded as the experience that affected them the most). Any one of these experiences would be sufficient to be clinically associated with psychological symptoms.

9.4.1 Individual traumas

The relationship of each individual type of trauma (as itemised in the questionnaire) with Civilian Mississippi was examined. One-way ANOVAs were conducted on each type of experience measured with Civilian Mississippi scores as the dependent variable. Eight of the experiences were significantly related to Civilian Mississippi scores. Table 12 shows the results of the ANOVAs and the number of respondents who experienced each type of trauma at least once.

Table 11**Pearsons r Correlations Between Trauma Variables and Civilian Mississippi Scores (N = 498).**

	Trauma	Multiple Trauma	Lifetime Trauma	Trauma Before	Trauma After	Trauma On Duty	Trauma Off Duty
Trauma							
Multiple Traumas	.96**						
Lifetime Trauma	.84**	.81**					
Trauma Before	.14*	.08	.03				
Trauma After	.93**	.91**	.82**	-.23**			
Trauma On Duty	.86**	.83**	.76**	-.07	.87**		
Trauma Off Duty	.62**	.59**	.49**	.28**	.51**	.16**	
Civilian Mississippi	.31**	.31**	.31**	-.01	.31**	.29**	.17**

*p<.01 **p<.001 (two-tailed)

Table 12

Means and F Ratios of Civilian Mississippi Scores According to the Experience of Individual Trauma.

Traumas	Civilian Mississippi Mean Scores		F
	Yes	No	
Military Combat	84.81 (N=16)	78.77 (N=491)	2.27
Robbery, Mugging or Holdup	87.52 (N=38)	78.26 (N=469)	12.37***
Motor Vehicle Accident	80.80 (N=149)	78.19 (N=358)	2.89
Police Officer Killed	78.27 (N=11)	78.97 (N=496)	.02
Member of Public Killed	81.42 (N=77)	81.42 (N=430)	2.22
Disturbing Homicides	81.44 (N=212)	77.17 (N=295)	9.15**
Disturbing Accidents	80.01 (N=402)	74.94 (N=105)	8.73**
Friend or Family Died	79.82 (N=221)	78.29 (N=286)	1.17
Police Friend Died	83.25 (N=204)	76.07 (N=303)	26.55***
Injury or Loss by Fire	82.81 (N=48)	78.55 (N=459)	3.17
Disaster	83.57 (N=57)	78.37 (N=450)	5.54*
Sex by Force	82.39 (N=23)	78.79 (N=484)	1.13
Assaulted Injured Life Threatened	79.82 (N=434)	73.86 (N=73)	9.05**
Chronic Distress at Work	84.36 (N=150)	76.69 (N=357)	26.18***
Other Distressing Experiences	83.28 (N=232)	75.30 (N=274)	34.13***
Disaster Victim Identification	81.19 (N=72)	78.59 (N=435)	1.68

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

These results do not take into account shared variance among the variables. For example it is very likely that most police officers will experience disturbing accidents or be assaulted but it may not be these incidents themselves that are related to PTSD symptoms. To control for covariance the set of fifteen variables were entered together into a regression equation with Civilian Mississippi as the dependent variable. The experiences together accounted for a significant 12% of variance on Civilian Mississippi scores (Adjusted $R^2 = .12$, $F(16,489) = 5.31$, $p < .001$). The four events that were related significantly to Civilian Mississippi scores were: a police officer friend's death, ($Beta = .14$, $p < .01$), a robbery, mugging or hold-up ($Beta = .14$, $p < .01$), chronic distress at work ($Beta = .14$, $p < .01$), and other experiences, ($Beta = .17$, $p < .001$).

Two of these important contributing variables are groups of further types of adverse experience and deserve more detailed description. Both chronic distress and other experiences covered a wide range of experiences that were detailed to some degree in the responses. There were 7 main types of chronic distress identified in the survey by those who answered yes to the chronic distress item ($n = 155$):

1. Attending repeated domestic violence incidents ($n = 17$).
2. Child and sexual abuse work ($n = 50$).
3. Criminal investigation and undercover work ($n = 9$).
4. Youth Aid work ($n = 5$).
5. Photography or Inquest work ($n = 18$).
6. Deaths including constant sudden deaths, suicides, or accidents ($n = 18$).
7. General duties policing including: front line work; one and two man stations; watch house; prison escort; dog handling ($n = 35$).

Eighteen respondents did not specify the type of work. Factorial ANOVA testing showed no significant differences between the 7 groups who reported these types of chronic distress on their Civilian Mississippi scores.

The item requesting details of experiences not specifically mentioned in the questionnaire resulted in many responses ($n = 242$) and a variety of types of experiences which are grouped below:

1. Those experiences that had already been mentioned in the survey. Respondents seemed to take the opportunity here to record the details of those experiences that were particularly salient. e.g. a family member who had died, particular horrific accidents and homicides, undercover work, or threats to life ($n = 90$).
2. Personal tragedies such as the breakdown of a marriage or a partner's mental problems ($n = 13$).
3. Cot deaths (sometimes the same age as officer's child) ($n = 21$).
4. Suicides especially those using shotguns ($n = 38$).
5. Witnessing death by homicide or accident ($n = 7$).
6. Dealing with families of victims ($n = 9$).
7. Shooting incidents in which firearms were used by or against the police ($n = 7$).
8. Being held hostage ($n = 4$).
9. Body recoveries, especially if the body was decayed ($n = 13$).
10. Threats from a member of the public to self and family ($n = 4$).
11. Crowds and riots (e.g the 1981 Springbok tour) ($n = 7$).
12. Organisational stressors such as complaints, inquiries, staff disloyalties or ill-treatment by supervisors ($n = 9$).

Other experiences were unusual and could not be easily grouped. Examples of these are having a police dog stabbed, seeing other officers hurt ($n = 3$), transferring a body from the mortuary to discover that she was alive, and being unable to help a child (for legislative reasons) who was subsequently murdered. Note that many respondents included more than one experience and others did not describe theirs.

9.4.2 Worst experience

Respondents were asked which of the traumatic experiences they had listed had affected them the most since the incident. The number of people who reported each incident as the one that had affected them the most, and that number as a percentage of all those who had experienced the event, are listed in Table 13. This includes 22

respondents who reported that no incident had affected them. Some incidents are clearly more often cited than others e.g. disturbing accidents 111 times, compared to natural disaster (0) or military combat (1). The experiences that were more often reported as having the worst effects were sex by force (21.7%), disturbing homicides (22.2%), disturbing accidents (27.6%) and chronic distress at work (27.3%). The death of a friend or family member (17.6%) and the death of a police officer (18.2%) were also often chosen. The most common choice was 'other experiences' (49.6%). This is partly an artefactual result owing to the number of respondents who chose to record the details of their worst single experience in this item (see above). Three of these experiences, disturbing homicides, disturbing accidents and chronic distress, have also been shown to have a reliable relationship with Civilian Mississippi scores. However there is no such relationship for the others.

To assess the association of these events with PTSD symptoms and the impact reported by respondents, the numbers of those who were classified as PTSD cases (Civilian Mississippi score = >95), and who reported each incident as the worst, were recorded. For the same purpose the mean Civilian Mississippi score for those reporting each incident was also recorded (see Table 13 for these results). Chi-square analysis showed no significant difference in the frequency of reporting of any particular incident for PTSD cases compared to non-cases. There was also no significant difference between the groups on Civilian Mississippi mean scores, except for the difference between the means of those who reported effects from their traumatic experiences combined ($M = 79.70$) and the group who reported no effects from their experiences ($M = 71.82$), $t(457) = 2.29$, $p < .05$ (two-tailed).

The difficulties of associating particular types of traumatic events with psychological outcomes is demonstrated by anomalous individual results. An example of such a result is the respondent with the highest score on the Civilian Mississippi (161). This officer recorded a member of the public being killed as the experience that had affected them the most, but was the only respondent, among 3 others who recorded this type of event as having the worst effects, who scored above 95.

Table 13

Traumatic Experiences Showing Number Chosen as Worst Experience, Percentage of Those Who Reported the Experience, Number Classified as PTSD Cases, and Mean Score on the Civilian Mississippi (N = 508).

Traumatic Experience	No. chosen as Worst	Percentage of total	No. of PTSD cases	Civilian Miss. Mean
Military Combat	1	6.3%	0	87.00
Robbery, mugging, holdup	4	10.5%	0	75.75
Assaulted, injured, life threat	44	10.1%	5	80.23
Sex by force	5	21.7%	1	80.50
Injury or loss by fire	5	10.4%	1	73.00
Disaster	0		0	
Police friend died	17	8.3%	3	73.94
Family or friend died	39	17.6%	3	76.38
Motor vehicle accident	10	6.7%	0	71.80
Police officer killed	2	18.2%	0	75.00
Member of the public killed	7	9.0%	1	88.29
Disturbing homicides	47	22.2%	7	81.74
Disturbing accidents	111	27.6%	19	79.18
Disaster victim identification	4	5.5%	0	77.75
Chronic distress at work	41	27.3%	9	83.74
Other distressing experiences	115	49.6%	19	80.32
No experience was the worst	22		1	71.82

9.5 Correlations Among Social Support Variables and PTSD.

The fifth research goal was to make comparisons of the four aspects of Social Support in terms of correlations with each other. It was predicted that social support would be negatively related to PTSD symptoms. Simple correlations for all social support variables and the Civilian Mississippi are shown in Table 14. The social support variables are negatively and significantly related to Civilian Mississippi scores with 3 exceptions. Negative communication with peers (Peer Negative Communication) is positively and significantly related to Civilian Mississippi scores, while negative communication with supervisors (Supervisor Negative Communication) is positively, but not significantly related to Civilian Mississippi scores. There is no significant relationship between communication with peers about disturbing events (Peer Disturbing Communication) and Civilian Mississippi scores, although communication with supervisors (Supervisor Disturbing Communication) is negative and significant (a weak relationship, $r = -.14$).

Among the social support variables the strongest relationships are between the supervisor and peer content of communication variables. For example, positive communication with the supervisor (Supervisor Positive Communication) and positive communication with peers (Peer Positive Communication) are positively related ($r = .61$), as are Peer Disturbing Communication and Supervisor Disturbing Communication ($r = .55$). Communication about non-work matters with supervisors and with peers (Supervisor Personal Communication and Peer personal Communication), and Peer Negative Communication and Supervisor Negative Communication are also positively related. Other relationships to note among the content of communication variables are those of Peer Disturbing Communication and Supervisor Disturbing Communication with: Peer Negative Communication ($r = .39$) and Supervisor Negative Communication ($r = .55$); Peer Positive Communication ($r = .41$) and Supervisor Positive Communication ($r = .54$); and Peer Personal Communication ($r = .34$) and Supervisor Personal Communication ($r = .53$) respectively. In general the negative communication variables are not well correlated to the other content of communication variables.

Table 14

Simple Pearsons r Correlations Between Social Support Variables and Civilian Mississippi Scores. N=463

	Attitude	1	2	3	4	5	6	7	8	9	10	11	12
1. Talk	.32**												
2. Supervisor Social Support	.15*	.29**											
3. Peer Social Support	.17**	.44**	.37**										
4. Family Social Support	.11	.17**	.19**	.21**									
5. Peer Disturbing Communication.	.25**	.38**	.18**	.36**	.09								
6. Peer Personal Communication.	.00	.27**	.19**	.42**	.01	.34**							
7. Peer Negative Communication.	-.08	.00	-.13*	.06	-.04	.39**	.13*						
8. Peer Positive Communication.	.18**	.33**	.24**	.32**	.18**	.41**	.31**	-.06					
9. Supervisor Disturbing Communication.	.23**	.30**	.45**	.26**	.08	.55**	.18**	.12*	.30**				
10. Supervisor Personal Communication.	.10	.25**	.55**	.22**	.05	.21**	.39**	-.07	.29**	.52**			
11. Supervisor Negative Communication.	.02	.08	.20**	.01	-.06	.26**	.08	.41**	-.02	.55**	.34**		
12. Supervisor Positive Communication.	.18**	.26**	.46**	.22**	.14	.29**	.20**	-.08	.61**	.54**	.53**	.26**	
13. Civilian Mississippi	-.24**	-.38**	-.29**	-.30**	-.25**	-.08	-.17**	.20**	-.26**	-.14*	-.22**	.11	-.19**

* p<.01

** p<.001

Social support from peers (Peer Social Support) is positively and significantly related to ease of talking about traumatic experiences (Talk; $r = .44$), to social support from the supervisor (Supervisor Social Support; $r = .37$) and relatively strongly to all the peer content of communication variables ($r = .33$ to $.42$) except Peer Negative Communication. Similarly Supervisor Social Support is most strongly related to the content of communication with supervisor variables ($r = .45$ to $.55$) except Supervisor Negative Communication. Social support from family and friends outside work (Family Social Support) does not have any strong relationships with the work support variables.

As well as the positive relationship with Peer Social Support, Talk has relatively strong correlations with Peer Personal Communication, Peer Positive Communication, Peer Disturbing Communication ($r = .27$ to $.38$), and no relationship to Peer Negative Communication. Similarly Talk is less strongly but significantly related to Supervisor Social Support and shows weaker but significant relationships to Supervisor Personal Communication, Supervisor Positive Communication and Supervisor Disturbing Communication ($r = .25$ to $.30$) and not to Supervisor Negative Communication. Attitude to expressing emotions (Attitude) is related to Talk ($r = .32$) but does not show any patterns of relationships apart from weak but significant positive correlations with Peer Social Support, Peer Positive Communication and Supervisor Positive Communication, and slightly stronger correlations with both Peer Disturbing Communication and Supervisor Disturbing Communication.

9.5.1 Principal components analysis

The interrelationships described above were explored further with principal components analysis. The results of the final solution may be seen in Table 15, which shows the 12 variables entered into the final analysis. Principal components extraction was chosen as the most suitable for an empirical summary of the data set (Tabachnick and Fidell, 1989) and orthogonal rotation (SPSS varimax) used because of conceptual simplicity (although some correlations between components could be expected, oblique techniques produced similar solutions). Tests for suitability of the

matrix for principal components analysis showed acceptable levels of correlations among the variables (Kaiser-Meyer-Olkin Measure of sampling adequacy = .73), except for Family Social Support which was subsequently removed owing to low correlations with the other variables and a low communality in the solution. Components with an eigenvalue greater than 1 were extracted which resulted in four components which accounted for 68% of the total explained variance.

Three of the components were well defined by the variables and readily interpretable, whereas the fourth component was defined by only two variables: Attitude and Talk. Five variables related to support from the supervisor, loaded onto the first component which was named accordingly 'supervisor support'. Similarly, 4 of the peer support variables plus Talk, loaded onto component 2, named 'peer support'. The peer support variables Peer Disturbing Communication and Peer Negative Communication loaded with Supervisor Negative Communication onto a third component which was interpreted as 'negative support'. This suggests that communications about disturbing incidents were seen as negative, because of loadings along with negative communications with supervisors and peers.

The variables were not well defined by the components. There were two complex variables with loadings greater than .45 (Tabachnick & Fidell, 1989) on more than one component. Peer Disturbing Communication loaded onto both the 'peer support' component and the 'negative support' component. Talk loaded almost as strongly onto component 4 with Attitude, as it was loaded onto the 'peer support' component. Supervisor Disturbing Communication is also loaded on the 'negative support' component and Supervisor Negative Communication loads onto 'negative support'.

The components extracted in this solution give support to the expected conceptual relationships among the variables and also to further interpretations; e.g. the ease of talking about trauma is apparently related to peer support variables and not to support from supervisors. The complex variables are also inter-related in ways that are expected and interpretable; e.g. Peer Disturbing Communication is capturing elements of peer support and negative support, which may also be discrete aspects of support.

Table 15**Component Loadings and Communalities for Principal Components Extraction and Varimax Rotation on 12 Social Support Variables (N = 515).**

Variables	Component 1 'supervisor support'	Component 2 'peer support'	Component 3 'negative support'	Component 4	Communality
Supervisor Personal Communication	.82	.22	.08	-.08	.73
Supervisor Positive Communication	.76	.19	.00	.23	.66
Supervisor Social Support	.74	.22	-.09	.04	.60
Supervisor Disturbing Communication	.68	.10	.45	.30	.76
Peer Personal Communication	.21	.76	.16	-.24	.71
Peer Social Support	.15	.75	.01	.15	.60
Talk	.15	.52	.06	.50	.55
Peer Positive Communication	.36	.52	-.10	.30	.49
Peer Negative Communication	-.27	.13	.85	-.09	.80
Supervisor Negative Communication	.49	-.17	.72	-.02	.79
Peer Disturbing Communication	.12	.49	.56	.41	.73
Attitude	.08	.01	-.03	.85	.73
Eigenvalue	4.06	1.59	1.40	1.08	
Cumulative % Variance Accounted for	33.80	47.10	58.90	67.90	

There are interpretable inter-relationships among groups of the social support variables, and these groups explain 68% of the variance. Therefore the social support variables were combined into 3 composite social support variables ('peer support', 'supervisor support' and 'negative support') which were used along with Attitude and Family Social Support to test the social support model. The principal components analysis also showed that the model is not well fitted to the data (59% of the residuals between observed correlations and reproduced correlations were greater than .05) and there is not a simple underlying structure owing to a number of complex variables. For these reasons, the social support variables were also tested individually as predictors of PTSD symptoms, to further explore the contributions of specific aspects of support.

9.6 Regression of Social Support Variables on Civilian Mississippi Scores

The simple correlations found among the social support variables and the Civilian Mississippi (see Table 14) were examined further using multiple regression analysis to control for the inter-relationships among variables and to assess higher order relationships. A negative relationship between the social support variables and scores on the Civilian Mississippi was predicted, but these main effects must be interpreted as conditional or average effects if a higher order effect is shown to exist (Aiken & West, 1991). The model to be tested included the two way interactions which were predicted for the effects of attitudes to expressing emotion with each social support variable, and for trauma and each social support variable. Accordingly, a hierarchical regression equation was used to assess three blocks of variables: the first block to control for the contribution to the variance on the Civilian Mississippi of the demographic variables and trauma; the second to assess the additional contribution of the social support variables while controlling for each other; and the third, a series of interaction terms to test for the effect of higher order interactions between the variables as predicted.

Owing to the high number of variables in the equation and the distribution of missing data across those variables, the listwise deletion of missing data resulted in a total loss of 90 cases from the combination of the different variables, although the highest

number missing on any one variable was 21 (Attitude). To retain as much information as possible from each variable, the missing data was replaced by the mean of the relevant variable on the whole data set. (The results were not very different from the same analyses run on the reduced sample).

A preliminary regression run identified 11 cases as outliers. Two of these had standardised residual scores above 3 and were the extreme scorers (143, 161) on the Civilian Mississippi. Nine cases were identified as multivariate outliers that met the $p < .001$ criterion for Mahalanobis distance (Tabachnick & Fidell, 1989). These cases were inspected for accuracy and identifying characteristics. Seven were found to have high Civilian Mississippi scores (from 95 to 142) while 6 had low trauma scores (between 3 and 5, although 3 of the high PTSD cases also had high trauma scores of 10). All 11 outliers were deleted from the analysis. A multivariate scatterplot then showed acceptable linearity, normality and homoscedasticity among the variables and the remaining 516 cases were entered into the final analysis.

All predictor variables were centred (by subtracting the mean of the variable from each score) in order to eliminate non-essential correlation between the interaction terms and their constituent variables (Aiken & West, 1991; Jaccard et al., 1990).

9.6.1 Regression of grouped social support variables on Civilian Mississippi.

Step 1

The first block to be entered into the regression equation included trauma, length of service, gender, education, and branch of the service. These 6 variables were chosen because of theoretical importance in relationship to PTSD, or in the case of Branch, owing to a demonstrated relationship with Civilian Mississippi scores in the present study. Age was omitted because of its high correlation with length of service.

Following initial analyses, Branch was reduced to a dichotomous variable by collapsing the traffic and CIB categories into one, which was compared to the general duties group. This was done because the numbers were too low and the means were

equivalent on these two groups. Level of educational qualifications was collapsed into 3 groups: no qualifications, high school qualifications, and tertiary qualifications. From these groups two dummy dichotomous variables were created: in one, those with no qualifications or school qualifications are contrasted with those with tertiary qualifications (levels of Education2); in the other, having school and tertiary qualifications together is contrasted with no qualifications (Education1). The results of this step are presented in Table 16. The standardised beta coefficient (*Beta*) is reported and the total variance explained by this step of the equation is provided (R^2 and adjusted R^2). R was significantly different from zero. Trauma and the demographic variables explained 10% of variance (adjusted R^2) on the Civilian Mississippi, $F(6,509) = 10.75, p < .001$. Trauma showed the greatest impact on the Civilian Mississippi ($Beta = .29$); higher trauma scores were associated with higher Civilian Mississippi scores. The other significant contributor in the first step was Branch ($Beta = .09$) whose positive impact on Civilian Mississippi scores may be interpreted as higher scores on average for those in the traffic or CIB branches of the police. Education, Gender and Service were not significant.

Step 2

Five social support variables (Attitude, Peer Support, Supervisor Support, Negative Support, Family Support) were then entered into the equation and their effects on Civilian Mississippi scores assessed after the variance attributable to trauma and the demographic variables was accounted for. These results are also presented in Table 16. The same statistics as for the first step are provided, along with the added variance explained by the second block of variables while controlling for the previous block (R^2 change). R was again significantly different from zero. The social support variables together explained a further 17% in unique variance and the total variance explained in the Civilian Mississippi was 27% (Adjusted R^2), $F(11, 504) = 18.34, p < .001$. Of the control variables, Trauma maintained its significant relationship with Civilian Mississippi scores. Branch became non-significant with a drop in *Beta* to .04 suggesting that the relationship is mediated by levels of social support in the branches.

Table 16
Hierarchical Multiple Regression of Civilian Mississippi Scores on Trauma, Demographic and Five Social Support Variables Showing Standardised Regression Coefficients (Beta), R, R², Adjusted R² and R² Change (N=516).

Predictors	Step 1	Step 2	Step 3
<i>Controls</i>			
Trauma	.289***	.220***	.217***
Branch	.094*	.043	.045
Service	.015	.006	.012
Gender	-.002	.002	.002
Education1	-.120	-.134*	-.121*
Education2	-.093	-.114	-.109
<i>Social Support</i>			
Attitude		-.089*	.096
Peer Support		-.309***	-.308***
Supervisor Support		-.105*	-.104*
Negative Support		.157**	.155***
Family Social Support		-.129**	-.130
<i>Interaction</i>			
Attitude X Trauma			-.204*
Multiple R	.34***	.54***	.54***
Total R²	.11	.29	.29
Adjusted R²	.10	.27	.28
R² Change	.11***	.17***	.007*

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

The correlation coefficient for Education1 became significant, possibly because correlated social support variables are removing or "suppressing" (Tabachnick & Fidell, 1989) irrelevant variance in the relationship between education and Civilian Mississippi scores. The negative relationship is such that those with no educational qualifications are at risk for higher Civilian Mississippi scores than those with school or tertiary qualifications.

All social support variables showed beta weights significantly different from zero: Attitude (-.09), Peer Support (-.31), Supervisor Support (-.11), Negative Support (.157), and Family Social Support (-.13). These results are congruent with the results from the univariate statistics in that the support variables are negatively related to Civilian Mississippi scores, except for Negative Support which is positively related. Peer Support shows the strongest impact on Civilian Mississippi scores.

Step 3.

The PTSD model predicts that perceived emotional social support moderates the relationship between traumatic stressors and PTSD symptoms. The effect of this interaction is that if social support is low, there is a positive relationship between trauma and PTSD symptoms. If social support is high, then this association will be weaker. To test this prediction, product terms (Trauma * support variable) were created and entered individually on the third step. The interaction term whose beta weight was significantly different from zero was Attitude by Trauma. The results for this entry into the third step is shown in Table 16 which displays *Beta* for the interaction term and Multiple *R*, R^2 , adjusted R^2 , and R^2 change for its entry to the equation. The interaction term contributed significantly to an increase in Multiple *R* and explained a further .7% of the variance which was increased to 28%, $F(12, 503) = 17.40, p < .001$. The form of this interaction was explored by splitting each variable at the median to form a dichotomy of high and low scores and the mean Civilian Mississippi score of each 'high' and 'low' group was plotted. Figure 3 shows the form of the interactions: Trauma is positively related to Civilian Mississippi scores, and this relationship is significantly stronger if Attitude is low, which is the predicted form of the interaction.

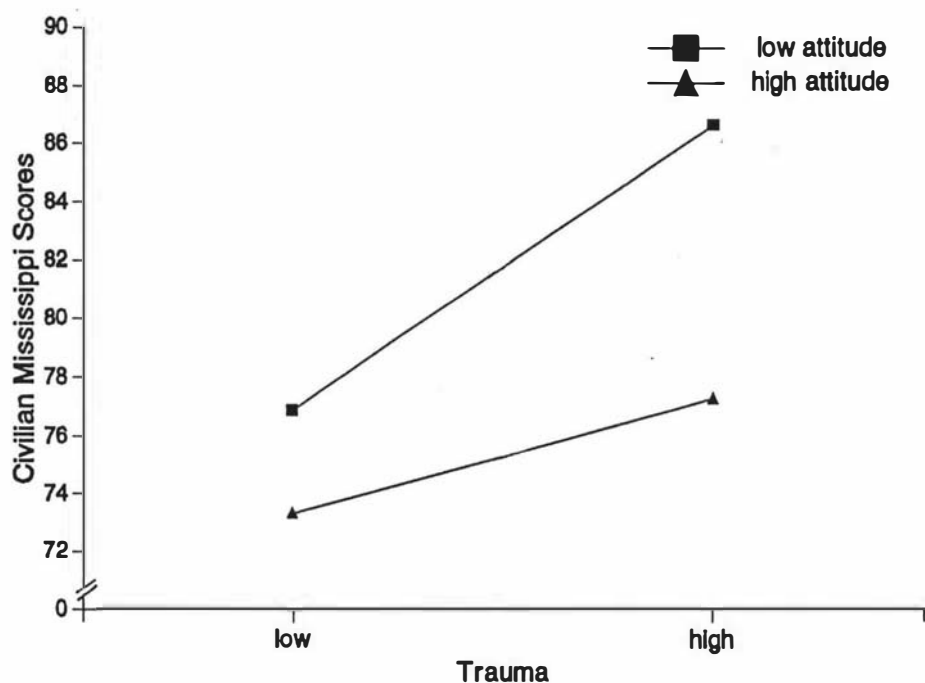


Figure 3. The form of the interaction between Trauma and Attitudes to expressing emotions on Civilian Mississippi mean scores.

9.6.2 Regression of individual social support variables on Civilian Mississippi

To examine in more detail the contribution of the individual social support variables to the variance on Civilian Mississippi scores, a further regression analysis was run in which the social support variables were entered individually into the equation on the second step. Such an analysis involves the loss of explanatory power, as the shared variance is not attributed to individual variables. However, it does give extra information about the individual contributions and the interrelationships of the different aspects of support that were measured.

Step 1

The results of this step are identical to those of step 1 of the 1st regression analysis and are reported in Table 17. Additional information for this analysis is contained in the squared semi-partial correlation (sr^2) of each variable with the dependent variable. These are provided for the independent variables at each step.

Table 17

Hierarchical Multiple Regression of Civilian Mississippi Scores on Trauma, Demographic and Thirteen Social Support Variables Showing Standardised Regression Coefficients (Beta), Squared Semi-partial Correlations (sr^2), R , R^2 , Adjusted R^2 and R^2 Change (N = 516).

Predictors	Step 1	sr^2	Step 2	sr^2
<i>Controls</i>				
Trauma	.289***	.068	.215***	.035
Branch	.094*	.009	.044	.001
Service	.015	.000	.007	.000
Gender	-.002	.000	.003	.000
Education1	-.120	.005	-.130*	.006
Education2	-.093	.003	-.109	.004
<i>Social Support</i>				
Talk			-.219***	.032
Attitude			-.098*	.008
Peer Social Support			-.043	.001
Supervisor Social Support			-.084	.004
Family Social Support			-.129**	.015
Peer Positive Communication			-.141**	.009
Peer Negative Communication			-.002	.000
Peer Personal Communication			-.092	.005
Peer Disturbing Communication			.176**	.013
Supervisor Positive Communication			.050	.000
Supervisor Negative Communication			.072	.002
Supervisor Personal Communication			-.041	.000
Supervisor Disturbing Communication			-.069	.001
Multiple R	.34***		.54***	
Total R^2	.11		.30	
Adjusted R^2	.10		.27	
R^2 Change	.11***		.18***	

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

The emphasis in this analysis is on individual contributions to the variance and sr^2 may be interpreted as the unique contribution that a variable makes to the total R^2 . For example, the greatest unique contribution to the variance on the first step is that of Trauma in that, R^2 would be reduced by .07 (sr^2) if Trauma was deleted from the equation.

Step 2

Thirteen social support variables were then entered into the equation and their effects on Civilian Mississippi scores assessed after the variance attributable to trauma and the demographic variables was accounted for. These results are also presented in Table 17. The same statistics as for the first step are provided, along with the added variance explained by the second block of variables while controlling for the previous block (R^2 change). R was again significantly different from zero. The social support variables together explained a further 18% in unique variance and the total variance explained in the Civilian Mississippi was 27% (Adjusted R^2), $F(19,496) = 11.05$, $p < .001$.

Of the control variables, Trauma again maintained its significant relationship with Civilian Mississippi scores. Branch became non-significant with a drop in $Beta$ to .04 and a corresponding drop in sr^2 , and Education1 became significant ($Beta = -.130$). Among the social support variables, 5 showed beta weights significantly different from zero: Family Social Support (-.13), Attitude (-.10), Talk (-.22), Peer Positive Communication (-.14) and Peer Disturbing Communication (.18). These results showed congruency with the simple correlations and squared semi-partial correlations, except for Peer Disturbing Communication which was significantly and negatively correlated with Civilian Mississippi scores in bivariate analyses (see Table 14) but positively related when other variables are accounted for. According to Tabachnick and Fidell (1989), this is another signal for the presence of a suppressor variable and further analysis will be required to explore these relationships within the social support block.

Further evidence of incongruence between the simple and multivariate results is in the correlations of Peer Social Support and Supervisor Social Support with the Civilian Mississippi. Both of these social support variables had significant and relatively high correlations with Civilian Mississippi scores (see Table 14) but were not significant in the regression equation. This incongruence is probably owing to shared variance with other social support variables such as Peer Disturbing Communication, Peer Personal Communication and Peer Positive Communication, in the case of Peer Social Support, and Supervisor Disturbing Communication, Supervisor Personal Communication and Supervisor Positive Communication for Supervisor Social Support (see Table 14). Because the significance tests are sensitive only to the unique variance a variable adds to R^2 , these two variables may be important contributors but their shared variance is not measured. Another variable that was also relatively well correlated with Civilian Mississippi scores but did not reach significance in the regression equation is Peer Positive Communication. *Beta* for this variable almost reached significance ($p=.05$) so it is possible that there is a relationship masked by shared variance. The social support variables together contribute .18 of total R^2 , but the total of the squared semi-partial correlations is .09. Only half of the explained variance is accounted for by individual support variables, the remaining .09 is shared variance.

Step 3a

The predicted interaction between attitudes towards expressing emotion in the work place and the other measures of social support was such that the negative relationship between social support and PTSD symptoms would be stronger if there was a more positive attitude towards expressing emotion. To test this interaction, product terms (attitude * support variable) were created and entered individually on the third step. If the regression coefficient for the interaction term is significantly different from zero then the estimated effect of support on PTSD varies across levels of Attitude (Aiken & West, 1991; Jaccard et al., 1990). Note that the use of these terms assumes a linear relationship in that the impact of social support on PTSD is increased monotonically as the level of Attitude increases.

The interaction terms for Peer Social Support by Attitude, Peer Personal Communication by Attitude and Talk by Attitude were significant, while the interaction terms for the remaining social support variables by Attitude were non-significant. The results for those entries into the third step that were significant are shown in Table 17a which displays *Beta* for the interaction term and Multiple *R*, *R*², adjusted *R*², and *R*² change for each entry to the equation. In each case the interaction term contributed significantly to an increase in Multiple *R*. Peer Social Support by Attitude explained 2% of the variance (*R*² change) and the total explained variance was increased to 29% (adjusted *R*²), $F(20,495) = 11.47, p < .001$. Peer Personal Communication by Attitude and Talk by Attitude each explained a further .6% of the variance which was increased to 28% in both cases, $F(20,495) = 10.80, p < .001$.

Table 17a

Hierarchical Multiple Regression of Civilian Mississippi Scores on Trauma, Demographic and Social Support Variables Showing Standardised Regression Coefficients (Beta), *R*, *R*², Adjusted *R*² and *R*² Change for Significant Attitude Interaction Terms Entered Separately at Step 3 (N=516).

Interaction Term	<i>Beta</i>	<i>R</i>	<i>R</i> ²	Adj. <i>R</i> ²	<i>R</i> ² Change
Peer Social Support x Attitude	.144***	.563***	.317	.289	.019***
Talk x Attitude	.087*	.552***	.304	.276	.006*
Peer Personal Communication x Attitude	.083*	.551***	.304	.276	.006*

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

The form of these interactions was explored by splitting each variable at the median to form a dichotomy of high and low scores. The mean Civilian Mississippi score of each 'high' and 'low' group was then plotted for the variables of interest. Figure 4 (Talk by Attitude) shows the form of the significant interactions, which is similar for each one: social support is negatively related to Civilian Mississippi scores, more strongly if Attitude is low, which is not the predicted form of the interaction. Other interaction terms (e.g. Supervisor Personal Communication by Attitude), which were not significant but approached significance, were also examined and showed the same form.

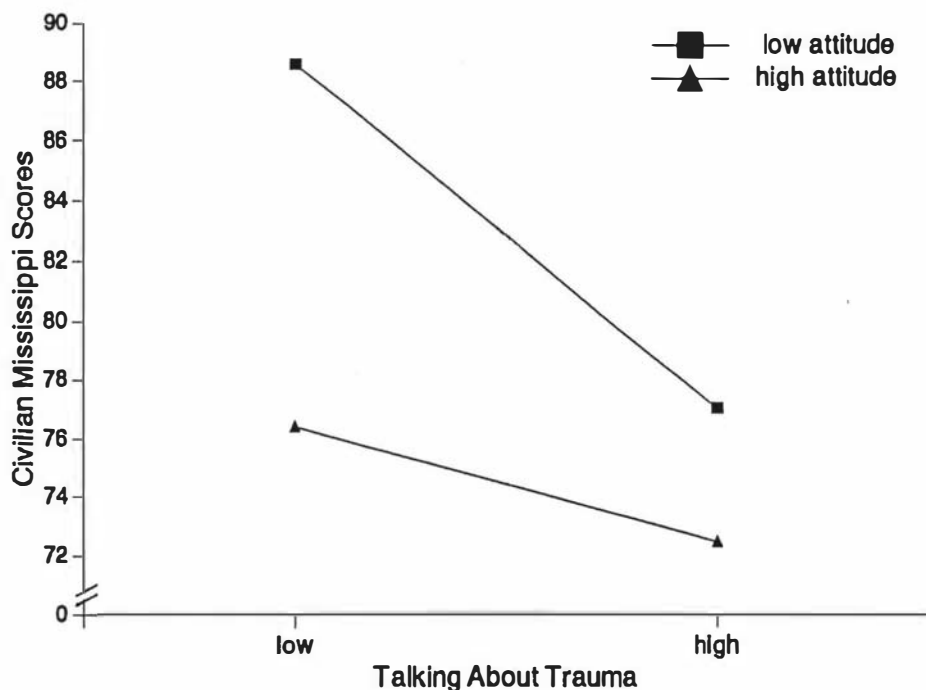


Figure 4. The form of the interaction between the ease of talking about trauma and attitudes to expressing emotions on Civilian Mississippi mean scores.

Step 3b.

The prediction that perceived emotional social support moderates the relationship between traumatic stressors and PTSD symptoms was tested with individual social support variables. The interaction terms whose beta weights were significantly different from zero were Attitude by Trauma and Peer Support by Trauma. The results for these entries into the third step are shown in Table 17b which displays *Beta* for the interaction term and Multiple *R*, R^2 , adjusted R^2 , and R^2 change for each entry to the equation. In each case the interaction term contributed significantly to an increase in Multiple *R*. Peer Social Support by Trauma explained .6% of the variance (R^2 change) and the total explained variance was increased to 28% (adjusted R^2), $F(20,495) = 10.79$, $p < .001$. Attitude by Trauma explained a further .8% of the variance which was again increased to 28%, $F(20,495) = 10.89$, $p < .001$.

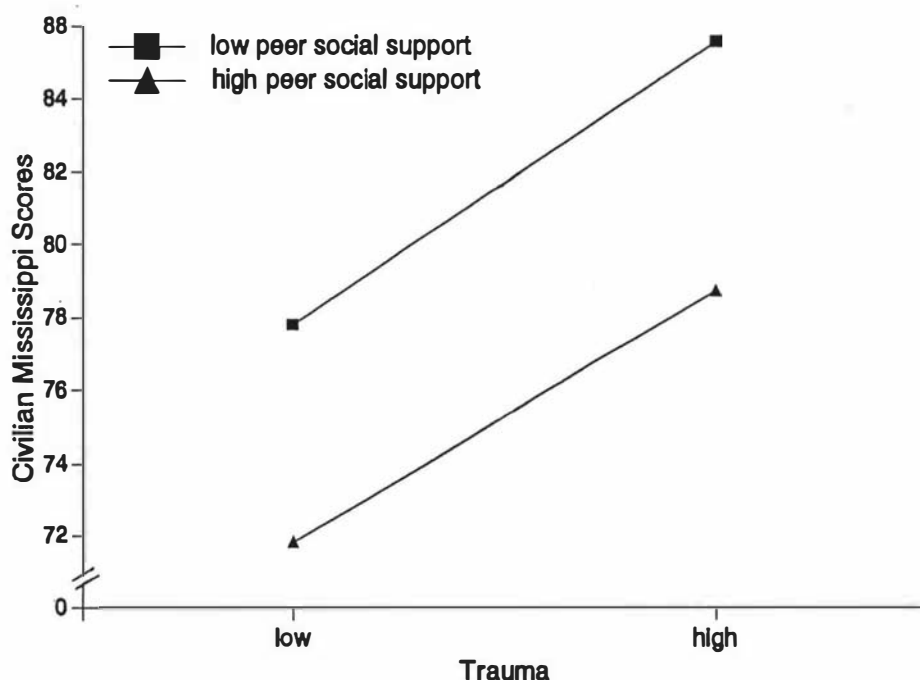


Figure 5. The form of the interaction of Trauma and Peer Social Support on Civilian Mississippi mean scores.

The form of the additional significant interaction (Trauma by Peer Social Support) was plotted as before. Figure 5 shows the form of the interaction which is as predicted and the same as for Trauma by Attitude: Trauma is positively related to Civilian Mississippi scores, and this relationship is significantly stronger if Peer Social Support is low.

Table 17b

Hierarchical Multiple Regression of Civilian Mississippi Scores on Trauma, Demographic and Social Support Variables Showing Standardised Regression Coefficients (Beta), R , R^2 , Adjusted R^2 and R^2 Change for Significant Trauma Interaction Terms Entered Separately at Step 3 (N=516).

Interaction Term	<i>Beta</i>	<i>R</i>	<i>R</i> ²	Adj. <i>R</i> ²	<i>R</i> ² Change
Peer Social Support x Trauma	-.080*	.550***	.304	.275	.006*
Attitude x Trauma	-.091*	.552***	.306	.277	.008*

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

9.6.3 Post-hoc analyses

Non-linear relationships

The buffering by social support hypothesis predicts linear relationships (LaRocco et al., 1980), but House (1981) suggests that while this assumption is consistent with theoretical and empirical work, it is possible that the effects are not always linear. A squared term representing the quadratic function of the Trauma score was added to the equation and tested with an interaction term for that function with each social support variable. No non-linear main effects or interaction effects were found.

Higher Order Interactions

Owing to the importance of Peer Social Support and Attitude as variables interacting with Trauma, it would be appropriate to test these variables further for the presence of higher order interactions such as Social Support by Attitude by Trauma. However Attitude is a poorly constructed variable and not sufficiently reliable to carry more weight than these exploratory analyses.

Suppressor Variables

Communication about disturbing experiences with peers (Peer Disturbing Communication) was significantly related to Civilian Mississippi scores in the regression equation, with a beta weight suggesting that more communication about disturbing experiences was related to higher Civilian Mississippi scores. However the simple correlations showed a significant and negative relationship between Peer Disturbing Communication and Civilian Mississippi scores. This incongruence suggested the existence of a variable in the regression equation that was suppressing some shared variance and allowing another aspect of the relationship between Peer Disturbing Communication and Civilian Mississippi scores to be expressed. Talk seemed a possible contender for this role as conceptually Peer Disturbing Communication and Talk are measuring similar constructs: talk about upsetting parts of the job (which could include traumatic experiences) and the ease of talking about traumatic experiences in particular. An examination of the simple correlations showed that Talk and Peer Disturbing Communication were indeed positively and significantly

correlated ($r = .39, p < .001$) and a run of the regression equation without Talk as an independent variable resulted in a negative beta weight for Peer Disturbing Communication ($-.07$). Therefore Talk was accounting for the negative variance on Civilian Mississippi scores shared by both Talk and Peer Disturbing Communication. The suppression of the shared variance allowed the positive relationship of Peer Disturbing Communication and Civilian Mississippi scores to be expressed. This 'negative' aspect of Peer Disturbing Communication was apparently related to communication about negative aspects of work (Peer Negative Communication), a variable that was also positively related to Civilian Mississippi scores. The evidence for the association of Peer Negative Communication and Peer Disturbing Communication comes from three sources. Firstly, the simple correlation of Peer Negative Communication and Peer Disturbing Communication is significant and positive ($r = .39$). Secondly, in the principal components analysis reported above (see Table 15) Peer Disturbing Communication loaded with Peer Negative Communication and Supervisor Negative Communication. Thirdly, a two-way ANOVA, with Civilian Mississippi scores as the dependent variable and Peer Negative Communication and Peer Disturbing Communication as independent variables, showed a significant interaction, $F(9,504) = 2.275, p < .05$. The form of this interaction was examined by plotting the means on the Civilian Mississippi of the two variables, dichotomised by a median split (see Figure 6). This showed that higher levels of Peer Disturbing Communication were related to lower Civilian Mississippi scores, only if Peer Negative Communication was low.

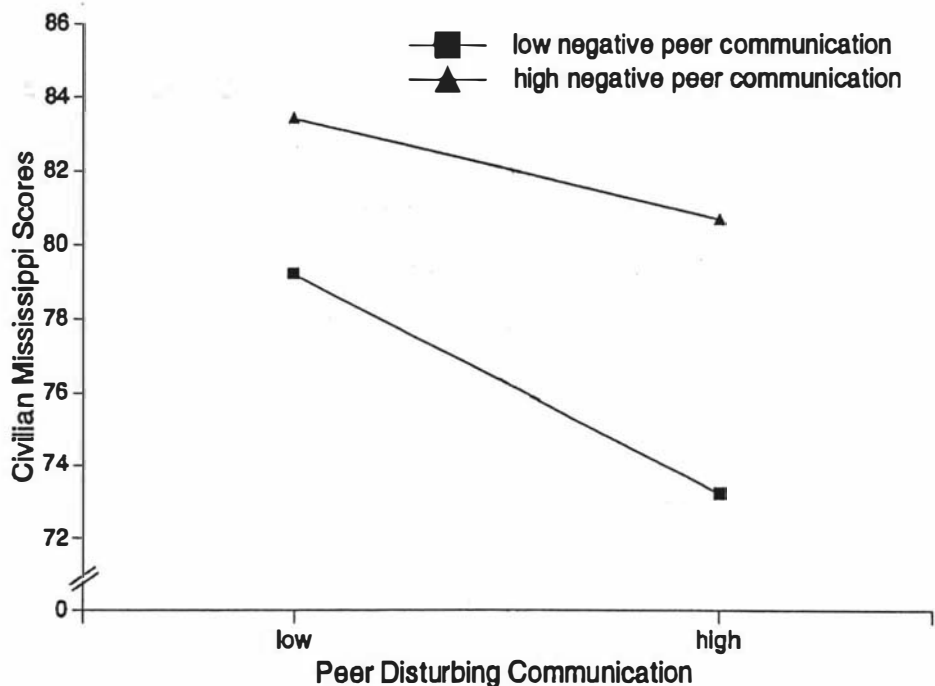


Figure 6. The form of the interaction between Peer Disturbing Communications and Negative Peer Communications on Civilian Mississippi mean scores.

9.7 Regression of Social Support Variables on Physical Health

Physical health symptoms were positively related to PTSD symptoms and consequently it was predicted that social support is negatively related to physical health symptoms. To test this hypothesis, the social support variables were entered into a hierarchical regression equation to assess three blocks of variables: the first block to control for the contribution to the variance on the PILL of the same set of control variables used in the Civilian Mississippi regression (see above); the second to assess the additional contribution of the social support variables while controlling for each other; and a series of interaction terms to test for the effect of higher order interactions between the variables.

Missing data was replaced by the mean of the relevant variable on the whole data set. (The results were not very different from the same analyses run on the reduced sample). A preliminary regression run identified 9 cases as outliers. One of these had a standardised residual score above 3 and was an extreme scorer (149) on the PILL. Eight cases were identified as multivariate outliers that met the $p < .001$ criterion for Mahalanobis distance (Tabachnick & Fidell, 1989). These cases were inspected for accuracy and identifying characteristics and subsequently deleted from the analysis. 518 cases were entered into the final analysis. All predictor variables were centred (by subtracting the mean of the variable from each score) in order to eliminate non-essential correlation between the interaction terms and their constituent variables (Aiken & West, 1991; Jaccard et al., 1990).

Step 1

The first block of variables to be entered into the regression equation included trauma, length of service, gender, education1, education2 and branch of the service (for details of these variables see results of regression on Civilian Mississippi above). The results of this step are presented in Table 18. The standardised beta coefficient (*Beta*) and the squared semi-partial correlation (sr^2) for each variable with the dependent variable is reported. Trauma and the demographic variables explained 5% of variance (adjusted R^2) on the PILL, $F(6,511) = 5.48$, $p < .001$, and Trauma was the only variable with *beta* significantly different from zero. This relationship is positive and R^2 would be reduced by .05 (sr^2) if Trauma was deleted from the equation, indicating that Trauma was contributing practically all of the variance at this stage.

Step 2

Thirteen social support variables were then entered into the equation and their effects on physical symptoms assessed after the variance attributable to trauma and the demographic variables was accounted for. These results are also presented in Table 18. The same statistics as for the first step are provided, along with the added variance explained by the second block of variables while controlling for the previous block (R^2 change). R was again significantly different from zero.

Table 18

Hierarchical Multiple Regression of PILL Scores on Trauma, Demographic and Social Support Variables Showing Standardised Regression Coefficients (Beta), Squared Semi-partial Correlations (sr^2), R , R^2 , Adjusted R^2 and R^2 Change ($N = 518$).

Predictors	Step 1	sr^2	Step 2	sr^2
<i>Controls</i>				
Trauma	.251***	.051	.191***	.027
Branch	.007	.000	.047	.002
Service	-.024	.000	-.025	.000
Gender	.073	.004	.066	.004
Education1	-.055	.002	-.058	.002
Education2	.048	.002	.044	.001
<i>Social Support</i>				
Talk			-.103*	.007
Attitude			-.131**	.014
Peer Social Support			-.004	.000
Supervisor Social Support			-.079	.003
Family Social Support			-.077	.005
Peer Positive Communication			-.108	.005
Peer Negative Communication			.016	.000
Peer Personal Communication			-.047	.001
Peer Disturbing Communication			.094	.003
Supervisor Positive Communication			-.000	.000
Supervisor Negative Communication			.083	.003
Supervisor Personal Communication			-.103	.004
Supervisor Disturbing Communication			-.018	.000
Multiple R	.25***		.41***	
Total R^2	.06		.17	
Adjusted R^2	.05		.14	
R^2 Change	.06***		.11***	

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

The social support variables together explained a further 11% in unique variance and the total variance explained in the PILL scores was 14% (Adjusted R^2), $F(19,498) = 5.45$, $p < .001$.

Trauma maintained its significant relationship with the PILL but with a reduced impact shown by the drop in *Beta* (from .25 to .19). Among the social support variables, 2 showed beta weights significantly different from zero: Attitude (-.13) and Talk (-.10). No other social support variables reached significance in the equation.

Step 3.

Because the impact of trauma on physical health and the relationship of some social support variables to physical health follow the PTSD model, an interaction between trauma and social support was also tested in the physical health regression model. The product terms (Trauma * support variable) were entered individually on the third step. The interaction terms whose beta weights were significantly different from zero were Talk by Trauma and Family Social Support by Trauma. The results for these entries into the third step are shown in Table 18a which displays *Beta* for the interaction term and Multiple R , R^2 , adjusted R^2 , and R^2 change for each entry to the equation. In each case the interaction term contributed significantly to an increase in Multiple R . Family Social Support by Trauma and Talk by Trauma both explained a further 1% of the variance (R^2 change) increasing the total explained variance to 15% (adjusted R^2), $F(20,497) = 5.52$ (for Talk) and 5.61 (for Family Social Support), $p < .001$. The interaction term for Peer Social Support by trauma almost reached significance ($Beta = -.079$, $p = .05$), but contributed only .6% to R^2 change.

Table 18a
Hierarchical Multiple Regression of PILL Scores on Trauma, Demographic and Social Support Variables Showing Standardised Regression Coefficients (Beta), R, R², Adjusted R² and R² Change for Significant Trauma Interaction Terms Entered Separately at Step 3 (N = 518).

Interaction Term	Beta	R	R ²	Adj. R ²	R ² Change
Family Social Support x Trauma	-.113**	.429***	.184	.151	.012**
Talk x Trauma	-.100*	.426***	.182	.149	.009*

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

The form of these interactions was explored by splitting each variable at the median to form a dichotomy of high and low scores and the mean Civilian Mississippi score of each ‘high’ and ‘low’ group was plotted. The form of the significant interactions, which is similar for each one is also the same as that of the Trauma interactions on Civilian Mississippi: Trauma is positively related to physical symptoms and this relationship is significantly stronger if Talk or Family Social Support is low.

Product terms to test for interactions between each social support variable and Attitude, were also entered individually on the third step. There were no significant interactions.

9.8 Comparing Work Groups.

The final research goal was to compare groups of police officers on the basis of social support variables and PTSD symptoms while excluding PTSD sufferers. It was predicted that groups of police officers who report higher social support will also report lower PTSD symptoms. To test this prediction and to determine which combination of social support variables would best predict group reporting of PTSD symptoms, a stepwise discriminant function analysis, with Wilks' Lambda as criterion statistic, was run using 4 variables as predictors of membership in two groups. The composite social support variables: Peer Support, Supervisor Support, and Negative Support, plus Attitude, were the predictors used to discriminate between groups of High and Low PTSD stations.

The groups on the dependent variable were created from the main sample by using the means on the Civilian Mississippi for each station in the survey. The 'low PTSD' group included all those individuals working at stations which had a mean Civilian Mississippi score of 76 or less. The 'high PTSD' group included all those stations with a mean score of 82 and above. These cut-off scores (3 above and below the overall sample mean of 78.9) were chosen on the basis of separating the groups but leaving sufficient numbers in each group to run the analysis. From these two groups one station was excluded ($M = 82.22$) owing to confusion in the distribution of the questionnaires so that there was a possibility that some respondents were from different stations. Another station was excluded ($M = 75.8$, $SD = 25.72$) owing to extremely high variance. Eleven other stations (both high and low) were excluded because they were one-person stations, and social support from peers and supervisors at work would not be relevant. Ten respondents were excluded from the analysis because of at least one missing discriminating variable.

From the remaining sample, 35 were excluded as PTSD cases, using the cut-off score of 96 (see Chapter eight). The least conservative cut-off score was chosen as the point more likely to exclude any group members whose psychological symptoms could be affecting their perception of social support at their station. In this way only

measurements on the social support variables for non-PTSD sufferers were used, after stations had been classified as high or low PTSD. This method was used to remove the influence of the perceptions of those who were classified as PTSD sufferers on the social support measures (see Chapter eight). This left 150 in the analysis; 72 in the Low PTSD group and 78 in the High PTSD group.

A t-test (for unequal variances) showed that the difference between the means of the 2 groups on the Civilian Mississippi (High = 83.99, Low = 73.34) was significant, $t(182.14) = 4.79, p < .001$. These 2 groups were also tested for differences between the means of the PILL (High = 26.24, Low = 20.33) which was significant, $t(191.05) = 2.26, p < .05$.

The mean differences between the groups on each social support variable showed the same direction as the correlations with the Civilian Mississippi for the whole sample. That is, the low PTSD groups showed higher mean support scores, except for Negative Support which had higher mean scores in the high PTSD groups. Univariate statistics revealed that only the mean scores for Peer Support were significantly different between the high and low PTSD groups, $F(1,150) = 5.89, p < .05$. The individual social support variables were also tested and among these Talk showed a significant difference between the group means, $F(1,153) = 8.51, p < .01$.

Regression analyses were run on each PTSD group to check for outliers with high standard scores and for multivariate outliers. Using Mahalanobis distance, with a probability estimate of $p < .001$, there were no multivariate outliers in the two groups used for the Discriminant analysis. To test for violation of the assumption of homogeneity of variance-covariance matrices, an F test was run on Box's M statistic (3.12) for all the variables which proved non-significant, $F(3,4969117.7) = 1.023, ns$.

The discriminant function analysis resulted in 2 of the variables, Peer Support and Negative Support being entered into a discriminant function which explained 6% of the variance on the dependent variable (canonical correlation = .25). The pooled-

within-groups correlations between the discriminating variables and the canonical discriminant function were .81 for Peer Support and -.28 for Negative Support. This indicates that Peer Support is the most important discriminating variable and the addition of Negative Support is adding little to the predictive value of the function. A test of Wilks' Lambda showed that the variation between the groups was significant, $\chi^2(2) = 9.16, p < .05$.

9.8.1 Reliability of the group ratings of social support variables.

To test whether the ratings on each of these social support variables made by individuals at different stations were reliable within groups (i.e. were the ratings at each station consistent?), intraclass correlations were calculated for Peer Support, Negative Support and Talk: the social support variables that have been shown to significantly discriminate between the high and low PTSD groups. The results of ANOVA tests above show that the means of Peer Support and Talk reliably differentiate between the groups in terms of average perceptions of social support, but the question here is, what is the degree of perceptual agreement between individuals in each group? According to Jones and James (1979) the appropriate measure of perceptual agreement among individuals is an intraclass correlation which provides a point estimate of inter-rater reliability from the mean squares of ANOVA and is often used in climate research. Using the formula provided by McNemar (1969) for unequal sized groups, intraclass correlations were computed from ANOVA results. These correlation coefficients for this sample are very low: for Peer Support ($N = 193$), .06 and for Talk ($N = 189$), .09. This indicates that although the average mean differences between groups are reliable, the individual perceptions of Peer Support or ease of talking about trauma within each group are not consistent.

9.9 Summary of Hypotheses

The first hypothesis that there will be a positive correlation between the reporting of physical symptoms and PTSD symptoms was supported.

The second hypothesis that there will be a positive correlation between traumatic stressors experienced by police officers and reported PTSD symptoms was supported.

The third hypothesis that perceived emotional social support will be negatively related to PTSD symptoms was supported for attitudes to expressing emotion, emotional support from peers (in particular, ease of talking about trauma and positive communications), supervisors, and non-work sources of support. It was not supported for negative communications about work, in particular for communications with peers about disturbing experiences which were positively related to PTSD symptoms.

The fourth hypothesis that the relationship between perceived emotional social support and PTSD will be moderated by attitudes towards expressing emotion in the work place was supported in regard to support from peers and the ease of talking about trauma in the work place.

The fifth hypothesis that perceived emotional social support will moderate the relationship between traumatic stressors and PTSD symptoms was supported in regard to social support from peers and attitudes to expressing emotion.

The sixth hypothesis that perceived emotional social support will be negatively related to physical health symptoms was supported in regard to the ease of talking about trauma and attitudes to expressing emotions. The ease of talking about trauma and support from non-work sources, also moderated the impact of trauma on physical symptoms.

The eighth hypothesis that work groups of police officers who report higher perceived emotional social support will also report lower PTSD symptoms was supported in regard to global support from peers and, in particular, the ease of talking about trauma at work.

Chapter Ten

DISCUSSION

10.1 Chapter Overview

This chapter will discuss the results from the study which has examined work related traumatic experiences, the prevalence of psychological and physical symptoms, and some approaches to the measurement of social support, in a sample of New Zealand Police. The relationships between these variables were investigated within the framework of a model which predicts that social support moderates the link between the experience of trauma and psychological symptoms of PTSD. This chapter has eight sections. In section 10.2, the results of the study will be detailed and discussed in terms of the research goals and hypotheses. Section 10.3 will discuss the results as they apply to the PTSD model, the buffering hypothesis of social support, the main effects, and other issues concerning the aspects of support, that emerged from the results. The following four sections (10.4 to 10.7) will discuss organisational issues, the implications of the results for intervention, the general limitations of the study, and suggestions for future research. Finally section 10.8 will present a brief summary and the conclusions.

10.2 Results of Research Goals and Hypotheses

This section will provide a discussion of the results that directly corresponds to each research goal and hypothesis as it was presented in Chapter seven. Section 10.2.1 discusses the first research goal and the findings that relate to the prevalence of PTSD symptoms. Section 10.2.2 discusses the results of the second research goal regarding physical symptoms and health and the first hypothesis. Section 10.2.3 discusses the third research goal and the second hypothesis regarding the number and types of stressors. Discussion of the results of the fourth research goal, concerning the measurement of demographic variables, is included in the following sections. Section

10.2.4 discusses the results in regard to the fifth research goal, the comparison of the different approaches to social support. Section 10.2.5 discusses social support and PTSD including the third, fourth and fifth hypotheses. Section 10.2.6 discusses the sixth research goal and the sixth hypothesis concerning a comparison of police stations on the basis of social support variables and PTSD symptoms. Section 10.2.7 discusses the results in regard to the seventh research goal and the seventh hypothesis in examining the relationships between trauma, social support and physical health.

10.2.1 PTSD symptoms in the Police.

The first research goal was to measure the prevalence of PTSD symptoms in a sample of New Zealand police officers. The mean scores and variance on the measure of PTSD symptoms in the present study matched those found for a group of civilians who had experienced a natural disaster in New Zealand (Eustace, 1994). Comparisons of the percentages of those classified as PTSD cases with other surveyed groups, revealed similar results, in that the New Zealand sample showed the same percentages of cases at two different cut-off points as did groups of civilians who had experienced violence and crimes in the United States (Norris, 1992). However, a New Zealand community sample of war veterans (Long et al., 1992), whose PTSD symptoms were assessed using the Military Mississippi, showed a greater percentage of cases. These figures suggest that police officers are at a similar risk of developing PTSD symptoms as other members of the community who have experienced at least one traumatic stressor, although military combat is arguably a more severe stressor. The results also showed that police officers are more likely to experience these stressors as part of the requirements of their work, and this aspect will be discussed further when the role of the traumatic experience itself is addressed.

An examination of group differences on PTSD scores showed that those officers with no educational qualifications had higher PTSD scores than those with school qualifications or higher. This result is consistent with all previous findings (e.g. Norris, 1992; Vincent et al., 1991). The branch of service in which an officer was employed was also related to systematic differences, in that members of the CIB and

the traffic safety branch showed higher mean PTSD scores than those in the general duties branch. Furthermore, those in the CIB who had not been to a psychologist showed higher mean PTSD scores than those in other branches. These effects were not predicted but could be interpreted as showing that those individuals in the CIB or traffic safety branch, are likely to have higher symptom scores, but those with more symptoms in the CIB are less likely to have sought help. Both of these group difference findings have implications for organisational staff development policies in these departments. There is further evidence in the study that has organisational development implications and this will be discussed in more detail below.

10.2.2 Physical symptoms and health.

The second research goal was to explore the relationship between the reporting of physical health symptoms and PTSD symptoms and to examine the types of symptoms reported. The first hypothesis, that there is a high positive correlation between PTSD and physical health symptoms, was supported by significant correlations of both physical symptoms and self-reported health with the Civilian Mississippi.

Those respondents who scored above 102 on the Civilian Mississippi were classified as PTSD cases for the purpose of further analysis. This group reported more symptoms, greater severity of symptoms and rated their general health as poorer, than those classified as non-cases. The individual symptoms that were reported as the most frequent and the most severe were similar for both cases and non-cases. Insomnia was one of the 10 most common and most severe symptoms reported by almost every PTSD case, but by less than half of the non-cases. The cases also reported their insomnia as more severe than the non-cases. This difference was expected, as insomnia is a symptom associated with PTSD. Musculo-skeletal problems, including back pains, stiff muscles and sore muscles, were common to both groups, with the PTSD cases also reporting more stiff joints. Eye problems, head aches and gastro-intestinal disorders were also common to both groups, although the most severe symptoms of non-cases included more respiratory illness symptoms such

as sneezing, coughing and congested noses. The frequency of respiratory ailments did not correspond to those symptoms that were commonly reported by cases in an older sample of New Zealand Vietnam veterans (Long et al., 1992), but there were similarities in terms of musculo-skeletal symptoms, headaches and pressure in the head for PTSD cases. There was no emphasis on skin ailments as demonstrated by Burges Watson et al. (1992) in a study of the disability claims related to PTSD in Australian Vietnam veterans. These authors cite Lipton and Schaffer (1988), who also did not find skin complaints, but did report cardiovascular, gastrointestinal and musculoskeletal conditions in their patients with PTSD. Further research is needed to establish if the particular physical symptoms associated with PTSD, identified in the present study, are found in other PTSD cases. The alternative possibility, which has been demonstrated in this and earlier studies cited above, is that there is simply an increase in the frequency and severity of the experience of a broad range of physical symptoms, and poor health in general, which is associated with the psychological symptoms of PTSD.

10.2.3 Traumatic experiences.

Traumatic Experiences in the Police

The research goal was to measure the number and types of stressors that police officers are likely to encounter. These stressors were examined while taking into account the additive effects of multiple stressors and traumatic stress from outside police work.

Trauma before joining the police was either weakly correlated or uncorrelated with the other trauma variables and not related to PTSD. In contrast, trauma experienced since joining the police was consistently highly correlated with the other trauma variables which indicates that most trauma occurs after joining the police. This was supported by the higher correlation of trauma after joining the police with PTSD. This would be expected since most police officers join when they are young and as a life progresses so must the potential for the number of traumas experienced. However, an inspection of the relationships between traumatic experiences after

joining the police and the other trauma variables, shows that trauma experienced on duty as a police officer is also more highly related to trauma in general than is trauma experienced while off duty. Trauma while on duty is also more strongly related to PTSD symptoms than trauma experienced while off-duty.

One relationship more difficult to explain is the negative relationship between trauma before joining the police and trauma after. A possible explanation is that the more trauma people have experienced since joining the police, the less likely they are to remember earlier trauma. This finding provides an interesting comparison with that of Buchanan (1994) who reported very high rates of trauma experiences among police recruits: 32.6% had experienced an assault (compared to 15% identified by Norris (1992) using the same schedule) and 23.5% of female recruits reported sexual assault (7.3% in Norris' sample). Perhaps an effect of time is also being measured in this type of survey, in that the experiences of police work eclipse earlier events, or perhaps earlier memories become less important with time.

The results from this part of the study support the suggestion that police are more likely to be subjected to traumatic stress through their work. Work related trauma is also more likely to be associated with PTSD symptoms, than traumatic experiences that are encountered in non-work situations.

Traumatic Experiences and PTSD

The second hypothesis, that there would be a positive correlation between traumatic stressors experienced by police officers and their reported PTSD symptoms, was supported. Trauma was positively and significantly related to PTSD and, while controlling for demographic variables, explained 29% of the variance. It is apparent that there is a reliable effect of the number of traumatic experiences on PTSD symptoms among police officers. This finding is supported by recent studies. Green (1994) reports that the primary risk factor that has been associated empirically with the development of the PTSD diagnosis is the level or severity of exposure to stressors. Violanti (in press a) cites several studies of combat veterans that support

the findings that repetitive trauma increases and amplifies symptoms. Using a design similar to that of the present study, Vrana and Lauterbach (1994) found that the total number of traumatic events in a sample of 440 students, was positively related to scores on the Civilian Mississippi. Goenjian et al. (1994) also report that although there was no difference between the symptom profiles of the victims of violence or a natural disaster, there were more severe post-traumatic stress reactions for those who had suffered both types of event. Williams (1993) offers a theoretical explanation of the effects of additional traumatic experiences. If individuals have not successfully resolved previous trauma, they may "stair-step" according to William's model, to more pathological reactions to the new event. Examples of workers who are particularly at risk for these stair-stepping effects of stress exposure are police officers. There is clear support for the cumulative effects on symptomatology of increasing numbers of traumatic experiences, and these findings have important implications for organisations in which employees are likely to suffer periodic or chronic exposure to traumatic events.

The rather weak correlations between the measures of traumatic experiences and PTSD were expected. The traumatic experience is a requirement for a diagnosis of PTSD but the stressor itself does not completely explain the development of the disorder. Notwithstanding this expectation, the results show that the trauma measures were not sufficiently sensitive to capture all of the variance in the experience of trauma in terms of the effect on PTSD symptoms. This is not surprising since summing the number of traumas is a rather crude measure that does not take into account the severity or individual salience of each experience. An example of this may be observed in the experience of one officer whose trauma score was very low, but whose PTSD score was very high. This result is interpretable, as one traumatic incident (a sexual assault in this case) is sufficient to cause PTSD symptoms. However this relationship does not contribute to the generalisation that has been made in the present study, i.e. that an increased number of traumatic experiences is related to higher PTSD symptoms. In addition, the trauma measure did not account for any other differences in the effects of the experiences that may have been caused by

repeated experiences of the same trauma or differences in the length of time since the trauma. Correlations between measures of trauma that were weighted to include these factors, and PTSD remained at the same strength as the correlation between trauma and PTSD (.30).

An attempt was made to capture the salience of certain types of experiences by asking respondents about the experience that had affected them the most. These responses had no systematic relationship to PTSD scores when analysed in terms of the type of experience. Once again the results of extreme cases showed that the psychological effects of some experiences are difficult to categorise. The highest PTSD score for any respondent, was recorded for one person out of the four who reported a member of the public being killed as their worst experience. This person was the only one of the four to score above 96 on the Civilian Mississippi. This type of experience is unusual and not often associated with PTSD in the sample, but this does not lessen its impact for this one case.

There was a systematic relationship found between officers' perceptions of the long-term effects of individual experiences and psychological outcome in general. The group who reported no effects of their experiences and the group who identified one particular experience as the worst had different mean PTSD scores. The mean PTSD score of the no-effect group was significantly lower than the mean PTSD score of the group that reported some effects. These results are very similar to those of Vrana and Lauterbach (1994). Using a schedule of comparable traumatic events, the Civilian Mississippi and one other PTSD measure, these authors found no systematic relationship between the types of events that respondents reported as the worst experience and PTSD scores. However those reporting no event did have the lowest mean score of any group on the Civilian Mississippi.

There are no particular traumatic experiences that have been identified, by the people who suffered those experiences, as more likely to be related to psychological symptoms. Nevertheless, across the range of experiences, people who have more symptoms are more likely to identify their experiences as having affected them. One explanation for these results is that incidents which are recognised socially as disturbing and likely to have psychological effects, such as horrific accidents or the death of friends and family, are also more likely to be socially supported. Pennebaker (1990) reports findings showing that there are some experiences, such as family death, that people are more likely to talk about than others, such as divorce. Victims are encouraged to recognise and express their emotions in these socially acceptable circumstances. Therefore, although such experiences are readily identified by victims as having the worst effects, they also have lower long-term impact owing to greater opportunities offered to talk about and process the trauma.

Some conclusions were drawn regarding the direct effects of certain types of experiences, without taking into account the respondents's evaluations of the experience itself. The analysis of direct relationships between PTSD and each traumatic experience showed that the events most likely to be related to higher PTSD symptoms were, a police officer friend's death, a robbery, mugging or hold-up, chronic distress at work, and other experiences. Of these incidents, none is among those listed for mandatory referral for trauma debriefing within the New Zealand Police (recall that the list of experiences requiring mandatory debriefing under the New Zealand Police trauma policy, was included in the trauma measure of the present study). None of these experiences are included in the examples listed for voluntary referrals (unless we include 'other experiences'). More than anything, these results reinforce the difficulty of pin-pointing certain types of incidents as more likely to affect individuals. They also point to certain short-comings in the assessment of trauma in the police and some areas of consideration that could be developed. The four types of incidents that were highlighted in the present study will be examined here.

The main types of traumatic experience found to be significantly related to PTSD symptoms were: the death of a police friend; assault, such as a robbery, mugging or hold-up; chronic distress at work; and those mentioned under 'other experiences'. The finding that the death of a police friend is an important stressor was not expected but nevertheless understandable. This finding is supported by Violanti (in press b) who reports the death of a fellow officer among the top three ranked stressors in a sample of U.S. police. Less clear is the role of a robbery, mugging or hold-up. This item is part of the original schedule developed by Norris (1990). Possibly assaults in general are regarded by police officers as stressful; physical attack was the second of Violanti's (in press b) top three stressors. Alternatively, being the victim of a crime may be very unexpected and therefore particularly distressing for police. Because the precise meaning of this item for police officers is difficult to interpret, such items could be rewritten to apply more directly to the police situation. Chronic distress is an example of an aspect of police work that has not yet been generally taken into account in trauma assessment. This item was included in the measure following conversations between police officers and the researcher. The result highlights the importance of assessing the effects of repeated aspects of the work as well as an emphasis on major critical incidents. Although the organisation is aware of the possible adverse effects of work in the sexual abuse area, it is apparent that there are other areas of police work in which repeated experience is related to PTSD symptoms. The importance of 'other experiences' highlights important general experiences that could have been included in the trauma schedule and examined separately, such as dealing with suicides or cot deaths. However, many of these experiences could have been noted by respondents within the categories that were listed in the trauma schedule. Ninety (of 242) examples properly belonged under specific categories given in the questionnaire. An important aspect that probably gave the 'other experiences' category the weight that it had in predicting PTSD, was that respondents used the opportunity to record the details of particularly salient traumas that they had experienced (the questionnaire did not give the opportunity to do so elsewhere, but just required yes/no responses). In this way 'other experiences' was probably collecting a great deal of the data that the worst experience question was

originally designed to gather (many respondents also listed their 'other experience' as the trauma that had affected them the most). Once again, the very strong effect of the range of experiences detailed under this item also highlights the wide range of different experiences that will have differing effects for different individuals, e.g. several respondents described the death of a family member while others focused on police related experiences.

10.2.4 Social support

Interrelationships of Social Support Variables.

The fifth research goal was to make comparisons of the different aspects of support, first in terms of their correlations with each other. Four broad types of social support were measured. The first was functional support from three sources: family and friends outside work, peers at work, and supervisors. The officers' perceptions of available support from sources at work were moderately associated with each other and only weakly associated with perceptions of available support from outside work.

The second type of support measured was the content of communications from two sources: peers at work and supervisors. There were four types of communication measured: talk about non-job matters, disturbing events on the job, and positive and negative communications about the job. The sources of communication were all related to each other in that officers were more likely to rate communications with supervisors as more frequent if they also rated communications with peers as more frequent. The types of communication were also positively associated with each other, except for negative job-related communications with both peers and supervisors, which was only related to communication about disturbing experiences. This replicates the findings of Beehr and colleagues (1990), that support from supervisors is primarily associated with positive or non-job-related communications and is only slightly associated with negative job-related communications. The present study extends these findings in two ways: a comparable result was found for peer communications and the more specific content of communication variable, disturbing experiences was included. Apparently, disturbing experiences, which include

traumatic experiences, are associated by officers with both negative and positive evaluations of the job. It is also interesting to note that communications about disturbing experiences with both peers and supervisors are associated with communication about non-job matters. This finding sheds some light on the finding of Beehr et al. (1990) that non-job-related communications were the main buffer of stress in their survey. These authors explained this finding by suggesting that supervisors distract subordinates with non-job-related or 'personal' talk under high stress conditions. However, the present results suggest that when subordinates need to talk about upsetting experiences (i.e. the emotional impact of stressors), then this type of communication is seen as personal as well as job related. Thus the present results provide evidence for a direct link between talk about upsetting experiences and 'personal' communication. The model of PTSD predicts that it is this emotional aspect of personal communication, rather than the distracting function suggested by Beehr et al. (1990), which will buffer the effects of trauma.

The third and fourth types of support measured were the ease of talking about traumatic experiences at work and the attitudes in the work place to the expression of emotions. As expected, these two aspects of support were associated, because the measure of ease of talk included an aspect of emotional expression. However, they were only moderately related. Talking about trauma included details as well as feelings about the experiences. Many officers found it easier to talk about the details of their experiences at work, than to talk about their feelings about those experiences.

There were clusters of interrelationships among all the social support variables that resulted from these four measures, and a principal components analysis was useful in revealing underlying structures in these relationships. The first finding was that the perceptions of support from outside work were independent of the four main components of work support: support from the supervisor, support from peers, negative support and attitudes to expressing emotions at work. The perceptions of functional support from the supervisor were associated with each type of content of communication with the supervisor, although negative communications were more

weakly associated with this group. This result is also a replication of the findings of Beehr et al. (1990). The perception of support from peers was associated with each aspect of content of communications with peers, with the exception of negative job-related communications, which was not related to this peer support component. The ease of talking about traumatic experiences was also associated with this group of peer-related support variables, suggesting that it is among their peers that officers are able to talk about their experiences. The third component was labelled negative support because the types of support that were associated in this group were related to communication about negative aspects of work. These aspects were, negative job-related communication with both peers and supervisors, and communication with peers about disturbing experiences. Here, the relationship of communication about disturbing events with both the positive and negative contents of support communications is highlighted. This anomaly will be discussed further below. The fourth component was defined by attitudes to expressing emotion. The ease of talking about traumatic experiences was part of this component and communication about disturbing experiences was weakly associated with this group.

To summarise, there were systematic variations in the relationships between the aspects of social support measured in the present study. There were variations between the types of support received from different sources. Support from outside work was not strongly related to support at work. There was a strong positive relationship between the evaluation of support at work from supervisors and peers. However, the ability to talk about traumatic experiences in particular was most strongly related to perceptions of support from peers. The negative communications about work were not related to positive communications, nor other aspects of support, except for communications about disturbing experiences. We turn now to a consideration of the effects of these variations on psychological and physical outcomes.

10.2.5 Social support and PTSD

The third, fourth and fifth hypotheses were addressed in this part of the study. The third was included within a broader research question: what is the main effect of each social support variable on PTSD after the effects of trauma, education, gender, length of service, branch of the service and each other social support variable have been accounted for? The specific hypothesis was that perceived support would be negatively related to PTSD symptoms. The fourth hypothesis was that attitudes to expressing emotion would moderate the relationship between trauma and PTSD. The fifth hypothesis was that social support would moderate the relationship between trauma and PTSD.

Main Effects on PTSD

As shown by the simple correlations, Trauma accounted for a significant 29% of the variance in PTSD scores. Of the other control variables only Branch was significantly related to PTSD and this relationship was suppressed when the social support variables entered. This result reflects the differences found between the CIB, traffic control, and general duties branches in the initial comparisons between groups (see Section 10.2.1). The relationship with social support suggests that mean levels of PTSD in the police branches are affected by different levels of social support in those branches. Possibly the same attitudes operate in some areas of the service that make it less likely that officers will seek help from peers, supervisors or professionals. After the social support variables were entered, the differences between those with no educational qualifications and those with some qualifications became significant. This result supports previous findings relating PTSD to education levels in a civilian population (Norris, 1992) and in a community sample of New Zealand veterans (Vincent et al., 1991). The relation to social support variables is possibly due to irrelevant variance that is shared with social support, such as more highly educated people being more likely to complain to peers or supervisors about the negative aspects of the job.

The hypothesis that low social support is related to higher PTSD symptoms was

supported for the composite variables of peer support and supervisor support. It was also supported for social support from outside work and for attitudes to expressing emotions. Of these, support from peers demonstrated the greatest impact on PTSD symptoms. Only the composite variable of negative support was positively related to PTSD symptoms. This indicates that communication about negative aspects of work with either peers and supervisors is associated with higher symptoms. This result is important in terms of the specificity hypothesis, suggesting that only some types of communication are supportive; other types are related to poor health outcomes. Solomon, Smith, Robins and Fishbach (1987) discuss the evidence for a distinction between social support and social interaction in which negative interactions are seen, not as part of a support continuum, but as stressors. There are many aspects of social interactions that may be burdensome.

The social support variables together contributed a further 18% to the variance in PTSD scores. This is higher than the magnitude of predictive power (around 10%) found in many reports of the effects of social support on stress outcomes (Solomon et al., 1986). When the variables were tested individually, the following were significantly related to PTSD symptoms: the ease of talking about trauma, attitudes to expressing emotion, social support from outside work and positive communications with peers. These variables had significant negative impact on PTSD, in that the higher the support variable score the lower the PTSD score. Among these variables, talking about trauma had the same level of impact on PTSD scores as the number of traumas itself. The importance of this variable is supported by a recent study of a non-clinical sample of college students (Vrana & Lauterbach, 1994). The traumatic event that was most strongly related to higher scores on the Civilian Mississippi was the type of event that respondents reported they were unable to talk about.

Social support from those outside work, such as family and friends, and positive communications with peers had less impact than talk about trauma, but more than attitudes to expressing emotion, which was weakly related. As a measure of functional support, social support from outside work seems an important factor. The

relative unimportance of the other measures of perceived support, support from peers and support from supervisors, is owing to the presence of the other work related support variables which have been shown to be strongly associated with these functional measures of support.

Contrary to prediction, when controlling for the impact of other social support variables, communication with peers about disturbing experiences was positively associated with PTSD. It is possible that those officers with higher PTSD scores also had more disturbing experiences to talk about. This would mean that rather than having an effect on psychological symptoms, communication about disturbing experiences was a result of having had those experiences. Although this is always a possible interpretation of cross-sectional analyses, there were other results that led to further investigation of this aspect of support. First, in the bivariate correlations the relationship was negative, and second, there were complex relationships with other social support variables (see section 9.5). The resulting analysis will be discussed below.

Attitudes to Expressing Emotions as a Moderator of Social Support

Attitudes towards expressing emotion was conceptualised as an aspect of the work place that would moderate the effects of communication and support among peers on PTSD. It was predicted that the negative relationship between social support and PTSD symptoms would be stronger if there was a positive attitude toward expressing emotions. This hypothesis was partly supported in the case of functional support from peers at work, personal communication with peers at work and the ease of talking about trauma at work. There was an interaction between these variables and attitudes to expressing emotion, but not in the expected direction. It was predicted that more positive attitudes would be protective if social support was also perceived to be available. However, the form of the interactions suggests that a positive attitude to expressing emotions is protective even if social support is not perceived to be available. Both the perception of a positive attitude and the perception of higher support at work were independently related to lower PTSD symptoms. The group that

has higher PTSD symptoms includes those who perceive a negative attitude to expressing emotion and report lower support from peers. This pattern of relationships was stable. The finding that those low on both social support and attitudes to expressing emotion were more likely to have higher PTSD symptoms was consistently found in each significant interaction. The same pattern was found in those that approached significance such as personal communications with supervisors. These interactions suggest that emotional support from peers may be perceived in different but related ways, and only if there is no form of emotional support is PTSD likely to be higher.

Social Support as a Moderator of Trauma.

In accordance with the PTSD model it was predicted that social support would moderate the relationship between traumatic stressors and PTSD. The predicted effect was that, under conditions of high social support, the positive relationship between trauma and PTSD outcomes would be weaker. When controlling for the effects of all other social support variables it was found that social support from peers and attitudes to expressing emotion were the variables that significantly moderated the impact of trauma on PTSD symptoms. The form of this relationship was as predicted. The increases in explained total variance were low, however McClelland and Judd (1993) have demonstrated that tests for interaction effects in field studies have very low efficiency. Even when reliable moderator effects are found, the increase in explained variance is often "disconcertingly" low. Peer support as a moderator is contrary to the finding of Beehr et al. (1990) that personal content of communication with supervisors, rather than the general functional measure of support, buffered the effects of strain on psychological outcomes. However these authors did not include peer support in their study and the present results suggest that the effect of peer support is related to, but stronger than supervisor support. It is also possible that the support from peers is the most efficacious source of buffering in the case of trauma and PTSD in particular. These findings support the buffering effect of support from peers and of attitudes to expressing emotions, on the relationship between trauma and PTSD. Recall that support from peers and attitudes to emotion also interact together,

in that, if both are perceived as low then PTSD symptoms will be higher.

Communication with Peers about Disturbing Experiences

An aspect of attitudes to talking about emotional experiences that was embedded within the social support measures was revealed by further analysis of peer communication about disturbing experiences and related variables. The ease of talk about trauma was directly and strongly related to lower PTSD symptoms. This relationship suppressed the variance in PTSD symptoms that was also accounted for by a very similar variable: communications about disturbing experiences with peers. This suppression revealed a positive relationship between PTSD and communication about disturbing experiences in that, the more officers talk about their disturbing experiences (not only traumas) then the more likely they are to have stronger PTSD symptoms. Further analysis showed that this negative component of communications about disturbing experiences was related to complaining about the work place. If officers are more likely to communicate negatively with peers (e.g. this station is a lousy place to work; we talk about the bad things about our work) then the beneficial effects of discussing their disturbing experiences, in terms of lower PTSD symptoms, is likely to be lost.

This finding was supported through the demonstration of a significant interaction effect between negative communication with peers and peer communication about disturbing experiences on PTSD. If officers communicate more about their disturbing experiences with each other, their PTSD symptoms will be lower, but only if they do not also discuss the work place in a very negative and complaining way. This negative aspect of work could be interpreted in at least two ways. First, officers who see the experiences as negative aspects of their work are therefore more likely to complain about their work. Second, that other negative aspects of the work place are impacting on officers' abilities to cope successfully with their traumatic experiences. These two interpretations may also be interrelated. Although organisational factors have not been examined in the present study, there is other evidence from the survey showing that work place issues, apart from the nature of the job itself, are an

important aspect of the ability of police officers to successfully cope with their work. These will be discussed further below under organisational issues (section 10.3).

Summary of Social Support Variables and PTSD.

Among the social support variables, higher support from outside work, greater ease of talking about trauma at work, and more positive job-related communication with peers were found to be related to lower levels of PTSD symptoms. When the support variables were combined, support from peers was found to have the strongest negative impact on the level of PTSD symptoms, rather than support from the supervisor or non-work sources.

Communication about disturbing experiences with peers was found to be related to higher PTSD, but the ease of talking about trauma was suppressing the variance related to lower PTSD symptoms and revealing the negative aspect of communication about disturbing experiences. Negative communications in general were significantly related to higher PTSD symptoms.

Attitudes to expressing emotions was found to have a main effect on PTSD but this was interpreted as a conditional effect in the light of the interaction of trauma and attitude to emotions; an interaction effect that supports the buffering hypothesis. Support from peers at work was found to buffer the effect of trauma on PTSD in the same way.

Attitude and support from peers also interact together in such a way that if officers perceive both negative attitudes to expressing emotion and low support from peers, then PTSD symptoms are higher. The ease of talking about trauma at work and personal communication with peers also interact with attitude to expressing emotions in this way. Overall the work related sources of support that were shown to be having effects on PTSD symptoms, were peers rather than supervisors.

10.2.6 Social support and PTSD between police groups

Trauma is a necessary prerequisite to PTSD, therefore the interactions of trauma with peer support and attitudes to expressing emotions, lend support to hypotheses about the direction of these effects, i.e. that higher emotional support reduces the likelihood of developing PTSD symptoms following trauma. Nevertheless, because of the cross-sectional design of the present study, the interpretation of the direction of the effects remains equivocal. For some of the social support variables in particular, there is also theoretical support for an interpretation that sees the support variables as outcomes of higher PTSD scores. For example, negative job-related communication is very likely to be the result of having PTSD symptoms. In fact, withdrawal from social support is one possible outcome of suffering PTSD symptoms, so that any form of social support is likely to be evaluated negatively. Evidence that does not support this interpretation, is that the cases which were excluded from the regression analyses as multivariate outliers were all extreme PTSD scorers. For this reason, the present findings are unlikely to generalise to the population of extreme PTSD scorers. However not every high scorer was excluded from the analysis. Accordingly, a further analysis was undertaken that would test the social support provided by different police groups, and its relationship with PTSD symptoms. This analysis was also designed to provide an opportunity to exclude the evaluations of social support by PTSD sufferers, while retaining the measurement of their symptoms for group comparison.

The hypothesis to be tested in this analysis was that groups of police officers who report higher social support will also report lower PTSD symptoms. Police stations were separated on the basis of mean PTSD scores into two groups: high PTSD stations and low PTSD stations. Thus, the station was classified as high or low PTSD, by including those with higher symptoms. All participants with PTSD scores above 95 were then excluded from the analysis. In this way the perceptions of those who had high PTSD symptoms would not be affecting an evaluation of support at each station. The findings from this part of the analysis showed that there was a difference between the mean PTSD scores of the two groups of stations. The social

support factors that showed a significant difference between the two groups of officers, at high or low PTSD stations, were composite peer support and the ease of talking about trauma. Officers at high PTSD stations reported lower support from peers and found it more difficult to talk about their traumatic experiences, than officers at low PTSD stations. Stations in which perceptions of peer support were higher and in which it was generally considered easier to talk about traumatic experiences, were also stations in which people were less likely to have PTSD symptoms. These evaluations of social support did not take into account the perceptions of those with a PTSD score above 95, and therefore the evaluations of support are unlikely to be the result of suffering from PTSD. This finding provides further support for the interpretation that the opportunity to talk with peers about traumatic experiences is protective against psychological symptoms.

When the social support factors were combined in a multifactorial analysis, the results partly supported the hypothesis above. Both support from peers and negative support were reliably different between the 'high' and 'low PTSD' group; however, only support from peers was higher in the 'low PTSD' group. Negative support was higher in the 'high PTSD' group. These differences between the means of the groups, support earlier results which demonstrate the importance of the type of communication that is actually supportive. These results both reinforce and extend the earlier findings of the present study. Those stations at which officers report higher average perceptions of support from peers are also likely to have a lower mean PTSD score for all officers. Similarly, those stations at which more negative talk about the job is reported, are also more likely to have a higher mean PTSD score overall. Because the perceptions of social support at these stations did not include those of officers with high PTSD symptoms, these reports of social support are less likely to be the result of having PTSD symptoms. Once again it is support from peers rather than supervisors that affected outcomes.

Analysis of individual perceptions within these groups showed that, even when the groups may be reliably differentiated in terms of average perceptions of talking about

trauma at 'high' or 'low PTSD' stations, the individual perceptions of the group members may vary. Perceptions of social support may change on average across the groups but these perceptions remain an individual matter. The ease of talking about trauma was expected to be a measure of group differences, because respondents were asked to consider this factor 'at your station'. However the perception of ease of talk was apparently more strongly influenced by individual perceptions. Although peer support, was evaluated on average as higher at 'low PTSD' stations, it was also evaluated at a range of levels by individuals.

10.2.7 Social support and physical symptoms

The hypothesis that social support is negatively related to physical health symptoms was supported for attitudes to expressing emotions and ease of talking about trauma, when controlling for the effects of trauma, demographic variables and the group of social support variables in the present study. Of the control variables, only trauma had any impact on physical symptoms. Social support from non-work sources and the ease of talking about trauma at work were also found to moderate the effects of trauma on physical symptoms. These results further support the prediction of a relationship between PTSD symptoms and physical symptoms and show that social support has impact on reported physical symptoms as well as on psychological symptoms.

PTSD and Physical Symptoms as Outcomes

The traumatic experiences accounted for 29% of the variance in PTSD symptoms compared with 25% of the variance in physical symptoms. There was a greater difference in the size of the effect of the social support variables on PTSD and physical symptoms. The social support variables accounted for an additional 18% of the variance in PTSD symptoms whereas they explained only a further 11% of the variance in physical symptoms. These differences, and the differences in the types of support variables which were interacting with trauma, suggest a different weighting of needs elicited by different manifestations of the effects of trauma. However the measures used in the present study are not sufficiently independent to draw any

conclusions regarding the finer details of such support type effects.

The results of greater interest are the similarities between the two sets of results, both in the effects of trauma and in the types of support which demonstrated significant effects. The support variables capturing the opportunity for emotional expression and talk about traumatic experiences at work, plus emotional support from outside work, are those related to both physical and psychological outcomes. These results support the findings of clinicians and researchers (see Chapters three and four) who suggest that the opportunities for disclosure of emotionally disturbing experiences in a supportive environment help to prevent the development of psychological and physical symptoms following traumatic events. In the present sample, the most effective source of this type of support at work was peers, rather than supervisors.

10.3 The PTSD Model

The Horowitz (1993) model of stress response syndromes is an empirically supported conceptualisation of the processing of traumatic experiences and the natural history of PTSD responses. This model was selected because it can include the effects of a variety of pre- and post-event factors that have been shown to affect the psychological outcomes of traumatic experiences. The present study was designed to explore one of the social factors that has been demonstrated to be related to PTSD outcomes following the experience of trauma: social support.

Horowitz (1993) suggests that causation in the PTSD model is best viewed as an interaction between trauma and other factors. Accordingly, the relationships of traumatic experiences, PTSD symptoms and social support were examined in terms of the buffering hypothesis of social support, which predicts that social support moderates the relationship between stressors (in this case trauma) and strains (here PTSD). The specificity hypothesis of Cohen and Wills (1985) which has also been supported by other theorists in social support research (e.g. Barrera, 1986), predicts that social support will buffer strains when the particular social support requirements elicited by a particular stressor are measured. In the case of trauma, the evidence

suggests that perceived emotional support and in particular, talking about traumatic experiences are the specific needs to be measured. In an occupational context the sources of support from those at work were also selected as the main focus of study and the attitudes to expressing emotion were included as a factor that interacts with the perceptions of support at work. In the following section the results of the tests of the buffering hypothesis will be discussed, followed by the implications for the PTSD model itself.

10.3.1 Moderating variables and the buffering hypothesis

This section will discuss those variables that were found to 'buffer' trauma and PTSD. The findings that perceived support from peers and attitudes to expressing emotion moderate the relationship between trauma and PTSD supports the buffering hypothesis. Peer support was chosen as a variable has been developed within the theoretical constraints of the social support research paradigm. It is described as tapping perceived emotional support (Barrera, 1986; Caplan et al., 1975; LaRocco et al., 1980) and this function of support was expected to be specifically related to the needs of traumatic experiences.

Attitudes to expressing emotions was conceptualised as a measure of the attitudes in the work place that moderate the effect of support on trauma. However the results of the analysis to test this showed that attitudes to emotion were functioning in an 'either/or' relation to peer support. Apparently either peer support or attitudes to emotional expression were buffering the negative effects of trauma. The measure was possibly capturing the likelihood of individual expression of emotion, rather than the general work place attitudes. In this case, the measure is also specifically related to the needs elicited by traumatic experiences and supports the specificity hypothesis.

The results suggest that attitudes to expressing emotions and perceived emotional support from peers act as a buffer between trauma and PTSD. In addition, talking about disturbing experiences with peers, and support from outside work sources are most likely to buffer the health effects of trauma.

The variables that were expected to be more likely to buffer trauma than global social support measures were the content of communication variables. However these showed no interaction effects. The main effects that were found for some of these variables were useful in revealing the effects of different types of communication on PTSD symptoms.

10.3.2 Interpreting main effects

Attitudes to Expressing Emotion

The weaker main effect of attitudes on PTSD was interpreted as an artefact of the significant interaction with trauma. Note that attitudes to expressing emotion also interacts with the effects of trauma on physical symptoms.

The Ease of Talking About Trauma

One variable that was chosen to be specifically related to trauma but did not show interaction effects was the ease of talking about traumatic experiences. This variable, along with attitudes to expressing emotion, did show interaction effects with trauma when physical symptoms was the outcome. There was a strong main effect on PTSD: if individuals rated talking about trauma at their station as easier, then their PTSD symptoms were likely to be lower. Talking about trauma was also the only variable that could reliably discriminate between groups of stations rated as high or low on the basis of higher or lower PTSD symptoms. Moreover, a significant interaction between trauma and the ease of talking about trauma was demonstrated when physical symptoms was the outcome variable. Owing to the nature of the importance of this variable in other analyses, it is considered that the ease of talking about traumatic experiences may moderate the effects of those experiences. There are several reasons for the possibility of a Type II error here.

One explanation is the difficulty of detecting interaction effects in field studies. McClelland and Judd (1993) have summarised findings that point to the difficulties of finding reliable interaction effects in field surveys owing to measurement, control, and theoretical constraints on power. They also demonstrate statistically that the odds

are against researchers who look for such effects owing to loss of variance through non-optimal distributions of the variables. Hills and Norvell (1991) also comment that the results for homogeneous populations with lowered variance, such as those in a single occupational group, are less likely to show such effects.

The main effect of the ease of talking about trauma on PTSD may be interpreted in terms of the effects of having PTSD symptoms on perceptions of how easy it is to talk about the experiences. This is a very likely explanation but it is not supported by the previous longitudinal and experimental evidence on which this variable is based (e.g. Pennebaker, 1992). Furthermore, the analysis of differences between groups, which showed differences in levels of the ease of talking about trauma at work, while excluding the perceptions of PTSD cases themselves, provides evidence against this interpretation.

If the interpretation that the ease of talking about trauma works towards prevention of PTSD symptoms is accepted, then there is a further argument for interpreting these results as evidence of a possible moderating effect on trauma and PTSD. That is the theoretical difficulty of interpreting this variable as having a main effect on PTSD regardless of levels of trauma. Without traumatic experiences, the officers would have no need to talk about them. The identifying symptoms of PTSD (intrusion of memories and avoidance) are defined by traumatic experience. Thus these three variables are inextricably related to one another by definition, and the strong negative relationship between the ease of talking about trauma and PTSD symptoms must be explained in terms of traumatic experience. A strong possibility for the failure of analysis to show this relationship is the measurement of trauma itself that was used; i.e. a measure that captures numbers of traumas rather than impact. This issue will be addressed in more detail when the measurement of trauma is discussed.

Positive Communications with Peers and Support from Non-Work Sources

Positive communications with peers and support from non-work sources were both negatively related to PTSD. The greater the levels of perceived support, and the more often officers reported communicating positively about work with peers, the lower their PTSD symptom scores were likely to be. A possible interpretation for these effects, that has been suggested by Ogus (1990), is that for people with these types of support in place, trauma is less likely to impact on coping resources and psychological symptoms are less likely to develop. Of course there is no evidence in the present findings to support conclusions about direction, so it is also likely that people who cope with trauma well are also more likely to perceive and maintain positive social relationships at work and at home. A further explanation that could include bi-directional effects is the support deterioration model in which stress results in the deterioration of perceived support which in turn is related to increased psychological distress (Barrera, 1986). This model has been demonstrated in a number of prospective studies, some of which have shown reciprocal relationships between social support and stress and symptomatology. The results of the present study point to the possible importance of both peer communication and non-work support in mediating the effects of trauma at work, but further investigation would be required to explore whether these relationships are described by any one of the suggested models. The importance of non-work support as a moderator of trauma when physical symptoms is the outcome, also suggests that this source of support is a buffer of the relationship between trauma and PTSD. Because of the difficulties of detecting interaction effects there is a possibility that a Type II error has been made in this case also.

Communication with Peers about Disturbing Events.

Communications with peers about disturbing experiences at work was shown to be positively related to PTSD, when controlling for the other social support variables. Apparently the more often officers talk with peers about their disturbing experiences the more likely they are to have higher symptoms, but this was shown to be a variable with mixed effects. The simple correlations showed that communications about

disturbing experiences were positively related to the ease of talking about trauma. Both these variables were negatively correlated with PTSD. However, factor analysis and regressions also showed that communications about disturbing experiences were related to the communications about negative work related experiences, which has a positive relationship with PTSD. The relationship between communication about disturbing experiences and PTSD must be interpreted in the light of the effects of the related social support variables. This has been more fully discussed above, in section 10.2.5.

10.3.3 Aspects of social support in the PTSD model

Both the buffering hypothesis and the specificity hypothesis of social support have been supported by the findings for two of the variables, peer support and attitudes to expressing emotion, that were selected for their fit with the hypothesised support needs elicited by traumatic experiences. This study provides further evidence for the importance of certain aspects of social support from peers at work in moderating the effects of trauma and thereby reducing the likelihood of developing PTSD symptoms. The specific aspects of support that are important in this context are those concerned with the ease of talking about trauma, the expression of emotion, and emotional support from peers. How do these aspects of support actually work to buffer the effects of trauma?

Horowitz (1993) explains the development of core PTSD symptoms in terms of a theory of cognitive schemas. People who experience a traumatic event need to process the meaning of the events in terms of existing cognitive schemas. If an event is outside normal experience, the cognitive structure needs time to assimilate and integrate the new experience into the person's meaning systems of value, identity, and self-esteem. The psychological defense of periodic avoidance of the intrusive unprocessed memories provides this time so that the adaptation can progress slowly without undue anxiety caused by overwhelming emotions connected with the event. In Horowitz' conceptualisation, emotions are not distinct from meaning systems (Horowitz & Reidbord, 1992) which are organised within the same system of mental

states. It is not very difficult to conceive of a possible place for talking about traumatic experiences and their associated emotions, within a conceptual framework that includes the gradual cognitive processing of a disturbing event. It is more difficult to explain the actual process from language to cognitive schema: the schema itself remains a metaphor for an essentially unknown mental abstraction. Recent writings about the social construction of cognition and emotions question the idea that talk can be directly mapped onto underlying cognitive representations (e.g. Edwards & Potter, 1992; Harré & Gillett, 1994) and are directed instead towards the study of the use of language itself. From this standpoint many psychological phenomena such as attitudes, reasoning and memory are seen to be centred in the language that is used to construct both actions and thoughts. Following from this, individual and private uses of language are understood to be derived from the social context and interpersonal interactions. If schemas are reconceptualised as socially constructed language based guidelines for perceiving, organising, interpreting and acting in the world, then it follows that talking to others (or writing to oneself) is the mechanism through which shattered schemas are reconstructed. In these terms, talking about emotionally disturbing experiences with those who have shared those experiences or with supportive others may be one of the most important aspects of support following trauma. An advantage of this view is that schemas, as products of socially constructed and shared resources, may be studied through the direct observation of natural language.

10.4 Organisational Issues

During the course of the present study respondents often made comments during conversations, or added extra notes to the questionnaire, that reinforced the importance of the factors chosen for study. These were comments such as:

"Its a silly thing I know...my pride stops me from taking stress leave."

"I had not told anybody about how I felt - not even my wife - although she was obviously aware something was wrong - due to my very short fuse."

"During this time I had good supervisors but one would not admit to being ill in this way."

Others wrote about sources of stress that they believed were more important problems than trauma, such as complaints against police, criticism by the news media, political criticism, attacks and pressure on families, or dealing with the justice system and organisational problems. The most frequently mentioned of these, and those that most people took the time and trouble to write letters about, were the organisational issues such as the pressures of shift work, internal police enquiries and complaints about the stress caused by the treatment of officers by the police executive. The latter included problems of the imposition of unfair work practices, inequities in conditions of work, no recognition for hard work and loyalty, and treating staff with total disregard for their welfare. Specific examples, that were mentioned, included recent changes in pay structure, which resulted in cuts in some salaries, or more personal experiences such as a visit from a member of the administration, to an officer in hospital who had been injured on duty, to inform him that he had been disengaged. The concern with these issues was highlighted by the results of the present study demonstrating an interaction between complaints about the work place and the impact of talk about disturbing experiences on PTSD symptoms.

The organisational aspect of police stress cannot be ignored even within a study that purports to focus on traumatic stress. In fact there do not seem to be many studies of stress in the police that do not mention the impact of organisational factors on trauma or other forms of stress. Sewell (1993), in describing the traumatic effects of multiple murders, describes two broad categories of stressor: organisational and event. Organisational stressors are specified as administrative pressures, the work environment, and role conflict. To these may be added faulty management systems and organisational systems (Brown & Feilding, 1993) and policy changes that do not match the needs seen by front-line staff (Armstrong, O'Callahan & Marmar, 1991). Some researchers suggest that police organisations are the main source of psychological distress among police officers (Brown & Campbell, 1990; Greller et al., 1992). Hart, Wearing & Headey (1995) found in their study of police stress that the organisational context in which people work is more important than the nature of the work in determining psychological outcomes. These authors also found that police

organisations can be beneficial as well as harmful to well-being. Williams (1987) stresses that the development of police personality and attitudes is a product of the organisational environment which can be altered by focusing on environmental conditions.

One particular aspect of organisational style that has been found to be directly related to the outcomes of traumatic stress is the support of staff by senior management that tells them they are cared for and valued. In New Zealand, Ford (1993) reports that the comments of professionals working with police officers who have suffered health problems related to stress, including PTSD, often mention the difficulties caused by the failure of senior management to understand and support the needs of front-line officers. One pervasive perception is that management will discard officers who are no longer functioning effectively without concern for the reasons for failing performance or recognition of past service. Bonifacio (1991) comments on the effects on the psychological health of injured officers who feel that they have been abandoned by the police department. Having already had their assumptions of invulnerability shattered by the traumatic incident that injured them, an officer whose department subjects them to bureaucratic procedure and suspicion feels additionally traumatised by the loss of expected support. Organisations that support staff with tangible recognition of the difficulties of their job can significantly reduce the effects of potentially traumatic work. Thompson (1993) reports a comparison between a group of ambulance workers and a group of police officers selected for body recovery duties at major disasters such as the Lockerbie air disaster. The police officers' scores on the PTSD scale were much lower than the ambulance officers', and the police rate of probable psychological distress on other measures was 16% compared to 60% of the ambulance officers. One of the differences that Thompson was able to point to between the two groups was in management style. There was a poor relationship between management and crews in the ambulance group, who felt that they were not valued for their skills. In contrast the police group were treated with attention to their welfare, privileges and debriefing sessions, as well as an unusually close relationship between the commanding officer and the men.

Evans and Coman (1993), who studied groups of police officers from two Australian police forces, also found that the major source of stress for police officers may come from the organisation in which they work. Their results showing that negative perceptions of the work environment heighten respondents' perceptions of stress contribute towards an explanation of the results of the present study. Police officers who reported higher communications about the negative aspects of the work and the work environment were more likely to have more PTSD symptoms. Furthermore, if officers did talk more about negative aspects of work, then their communications about disturbing experiences were less likely to lower their symptom scores. Evans and Coman recommend that occupational stress be conceptualised in terms of the two broad categories that are measured separately: one by a measure of job context stressors and one by a measure of job content stressors. Including such measures in future studies for traumatic stress would be useful. The job content measure would be focused on capturing the traumatic experiences that may trigger stress reactions, while the measure of organisational stressors would focus on those aspects of police stress that are likely to increase or contribute independently to psychological and physical health outcomes.

10.5 Limitations of the Present Study

10.5.1 Cross-sectional design.

The data in the present study are cross-sectional and therefore causal imputations cannot be made on the basis of these results alone. Perceptions of social support may be driven by PTSD symptoms and these limits to interpretation have already been discussed in section 10.2. Reports of the experience of trauma were retrospective and may be coloured by other coping processes and events since the experience. These limitations, which are shared by much of the social support and PTSD literature have been discussed in Chapter five. The present study was designed to continue this line of research and to improve upon these limitations by including a wide range of symptom levels in the sample, and to test for the possibility of PTSD symptoms causing perceptions of support. However, as mental and physical health outcomes are generally progressive in nature, they require longitudinal study to investigate causal

relationships. The present study was an exploratory test of a theoretical model and the results warrant further longitudinal investigation.

10.5.2 Measurement issues

One of the major causes of failure to find statistical evidence for theorised interaction effects in field studies is poor measurement of the hypothesised constructs (Jaccard et al., 1990; McClelland & Judd, 1993). There are reliability and validity issues for at least 4 of the major assessment instruments used in the present study. Two exploratory and previously untested measures, those of attitudes to expressing emotion and talking about trauma, showed some of the most interesting results and would need to be systematically developed before further study is undertaken. The measures of the hypothesised independent and dependent variables are also the subject of validity problems. These and related issues surrounding these measures will be discussed in the following sub-sections.

Measurement of Trauma.

The problems with the measurement of trauma in the present study begin with the construct itself and changing conceptions of the role of trauma in PTSD. Since the publication of *DSM-IV* (American Psychiatric Association, 1994), after this study was initiated, the nature of the stressor criterion has changed from the *DSM III-R* (A.P.A., 1987) description of a psychologically distressing event that is outside the range of usual human experience, to focus on the individual response to the event, of intense fear, helplessness or horror. This change reflects a shift from attempts to classify traumatic events by typology, to an interest in the meaning of events to individuals.

The schedule developed by Norris (1992), which was used in the present study as a basis for collecting reports of traumatic experiences, was designed to include measurement of the impact of events in terms of PTSD symptoms related to each particular event. This method did not seem congruent with the aims of the present study which were to collect information in a situation in which it was expected that the respondents would have experienced many events and general PTSD symptoms

were to be measured. The outcome of using this method of measurement was that only information about numbers of traumas was reliably related to PTSD symptoms. Although these findings are valuable and supported by other recent research, there are indications that there are other important aspects of the traumatic experience that were not captured by the measure used here. Possibly increased variance related to PTSD symptoms could be accounted for with improved measures, which take into account individual reactions to different events.

Green (1991) proposed that researchers collect information for the purposes of identifying stressor events that are most pathogenic. However the results of the present study suggest that there is great variance in the effects of particular types of stressors on individuals. Although there are some experiences in police work that may be associated with increased likelihood of PTSD symptoms, such as the death of fellow officers, there are others that have varying effects, such as the death of a member of the public. It seems likely that although there are broad types of events that will increase the risk for PTSD, the salience of one particular event to an individual is more difficult to predict. Paton and Smith (1995) suggest that there can be no event centred definition of traumatic events since individual reactions moderate their effects. The same authors recommend a focus on the characteristics of events likely to be perceived as traumatic by specific work populations such as police officers, fire fighters or emergency workers. These characteristics could include communication and co-ordination problems, identity with the victims or the involvement of children. Paton (1994b) presents evidence of the differential impact on PTSD symptoms of the same events in two different occupational groups who assisted following earthquakes in Armenia. The firefighter group who were unprepared for the particular event characteristics of a disaster situation showed significantly higher PTSD symptoms three months later. In a related example Paton and Smith (1995) demonstrate the differences between the impact of events on two different occupational groups who reported similar levels of traumatic experiences over a six month period. One sample had significantly higher PTSD scores and it was suggested that one important aspect of risk status is professional or individual

preparation for such events. A further issue here is the need for the development of norms for different occupational groups.

Atchison (1995) focuses on the problems of developing valid and reliable measures of traumatic events. She describes current inventories as focusing solely on the impact phase of the event in attempting to quantify the level of exposure and extent of loss, death and injury. While agreeing that more information is needed about the effects of threat, exposure and loss, Atchison also points to other aspects such as the degree of loss of control or level of preparation for the event and behaviour or psychological state during the event. These aspects of event characteristics may contribute to the critical cognitive reworking and psychological meaning attributed to the experience. In terms of the place of schema theory in the PTSD model, Atchison is suggesting that there are several aspects of the trauma experience itself that will be related to the ability of an individual to successfully process and assimilate that experience. These aspects of the event itself must be captured by the measurement of trauma in at-risk occupational groups, if the relationship with subsequent pathology is of interest.

To turn to the development of a traumatic incident schedule for police work in particular, there are two areas in which the schedule used in the present study could be improved. First there are several items that need further adaptation to make them appropriate to the police situation. One example of this type of item is that taken from the Norris (1992) schedule that asks whether the respondent has been assaulted, injured or had their life placed under threat. In a police context these three events could have different meanings. There are other important events that need to be included in some more specific form, such as suicides, cot deaths and shooting incidents because they are so frequently experienced by police. Secondly, the recording of individual types of trauma would be improved if respondents were given the opportunity to record the descriptive details of their worst experiences under the appropriate category. This may be appropriate in the police occupational context where it seems that the majority of respondents enjoyed being given the opportunity

to write about the details of their experiences. Given the theoretical background of the present study, this finding may also generalise to other groups.

Measurement of PTSD

The civilian version of the Mississippi scale for the measurement of PTSD was chosen for use in the present study, on the basis of the demonstrated reliability and validity of the military version. The version used in the present study showed good internal reliability and demonstrated predicted relationships with other variables such as physical symptoms and trauma. There are issues connected with the construct validity of PTSD itself and the use of this measure that will be addressed briefly here.

One issue in the development of the PTSD diagnosis is that of comorbidity (Breslau & Davis, 1987b; Green, 1991). PTSD sufferers have been found to have symptoms of other DSM-III-R Axis 1 disorders (e.g. Long et al., 1992) and it is not clear if these are separate disorders or overlapping diagnostic criteria. One concern is that the Military Mississippi assesses symptoms of anxiety and depression as well as symptoms of PTSD, and items related to substance abuse, suicide and depression were added to the scale because these disorders were commonly associated with PTSD in combat veterans (Keane, Caddell & Taylor, 1986). Aldwin, Levenson & Spiro (1994), who found high correlations with depression, suggest that this potential overlap of symptom assessment is not necessarily a problem because of unidimensionality suggested by the high internal reliability of the scale (.91 in the Aldwin et al. study). The Civilian Mississippi is a new version of this scale and Vreven et al. (1995) found that the whole scale correlates more highly with measures of general psychological distress than with other measures of PTSD. Also, the factor structure of the Civilian Mississippi was found to have multiple dimensions rather than the proposed single second-order factor of the Military version. The internal reliability of this scale in the present study (.90) suggested unidimensionality, but in terms of construct validity it is possible that a greater range of psychological symptoms than just those that contribute to a diagnosis of PTSD was measured in this study. There are two main issues here. One is the theoretical relationship between

the variables in terms of PTSD. The other is the assessment for practical purposes of the effects of trauma.

To assess the role of social support in the PTSD model it would be useful to have a measure that was unambiguously assessing the disorder as it is currently understood. To achieve this aim a second assessment instrument in the present study would have given additional validity information. Ideally, a structured interview assessment would be used for this purpose (Green, 1991). At present the results as they apply to PTSD cases in the present study are unclear as the largest group of multivariate outliers who were excluded from the analysis were those with very high PTSD scores. Thus these results can not be generalised to those who may be already suffering from PTSD but rather to those who suffer different levels of psychological distress. Additionally, although the Civilian Mississippi has been shown to perform better at higher levels of symptomatology (Vreven et al., 1995) comparisons using cut-off points to classify individuals as cases must be interpreted with caution.

For practical purposes, the assessment of the impact of traumatic events need not be limited to a diagnosis of PTSD. The present study has shown that there are psychological and physical outcomes related to the experience of trauma, and the Civilian Mississippi may be viewed as an instrument that will assess the psychological effects of trauma on a continuum, rather than as a diagnostic instrument. This has been its main use in the present study, and for this purpose, the inclusion of a variety of symptoms that have been found to be reliably related to the effects of traumatic experiences is an advantage rather than a limitation. Green (1994) cites arguments by other researchers that PTSD alone is too narrow an outcome of trauma upon which to focus and there is much evidence for the presence of other effects, including physical symptoms in the present study. Horowitz and Reidbord (1992) emphasise that the symptoms of PTSD are also the signs of a normal stress reaction and the disorder itself is defined by a pathological intensification and prolongation of these symptoms. Hence a traumatic stress reaction is not necessarily a disorder, but a period of distress which must be catered for appropriately in the work place to

prevent the development of other symptoms of disorder. Brom and Kleber (1989) point out that the criteria for the disorder draw an arbitrary line between normal and pathological processes and Violanti (in press a) argues for the inclusion of 'partial' PTSD symptoms in samples of police officers because those who do not meet full diagnostic criteria for PTSD do contribute to the level of morbidity. For these reasons, the emphasis on measurement in future studies of trauma in the work place, could be on stress reactions, including psychological and physical outcomes, rather than on PTSD per se.

Measurement of Ease of Talking About Trauma.

'Talking about trauma' is a brief measure designed for exploratory purposes in the present study, and the results suggest that this is an important specific social support variable. As the measure consists of only two items and a 5 point scale, it is limited in scope and probably content validity: there is possibly a wider range of variation in people's assessment of how easy it is to talk about these events. This limitation was an advantage for reliability and construct validity in that it is very clear what the items are asking about and no conceptual leap needs to be made between the construct and the operationalisation. The items do not have potential as a work place 'climate' measure; the tests of inter-rater reliability show that what was captured in the present study was individual perceptions of the ease of talking about trauma and not any structural qualities of the work place. Any development of this measure should retain the present advantages but it would be useful to develop more items to distinguish between talking about emotions and talking about the details of experiences.

Measurement of Attitudes to Expressing Emotions at Work.

The measure of work place attitudes that was developed for the present study has low internal reliability. An unreliable measure increases the chances of a type II error when testing for interactions and therefore is particularly unsuited to use in this type of field research. However, the attitude measure showed the most consistent moderating effect on trauma in that significant interactions were found for both PTSD and physical symptoms as outcomes. This result suggests that there is an important

relationship between attitudes and health in the work place and the measure should be examined and developed for future exploration. Unfortunately the low reliability and validity demonstrated by this measure limited the analysis of interactions to tests for first order interactions only.

The low internal consistency of the attitude measure suggests that there are validity problems and one of the problems became apparent when the relationship of items was examined. There was a difference between respondents' reported willingness to listen to others' expression of emotion and their willingness to express their own. Future development of the measure should focus on the expressed willingness to talk about emotions, as it is this aspect that is theoretically linked with the development of symptoms. Because the measure failed to capture work group differences, then the willingness to listen to others' expression of emotions becomes spurious (especially if nobody in that work place feels willing to talk about their emotions).

A further validity issue was highlighted by tests of the power of attitudes to interact, as hypothesised, with other social support measures. The interactions were not in the expected form, and were interpreted as showing that the measure was capturing respondents' perceived opportunities to express emotion, rather than group attitudes. Overall these are major anomalies in the construct validity of an instrument that has shown important effects in the present study. Research into the qualitative aspects of police officers willingness to express emotion at work is necessary to continue exploration in this direction.

The importance of individual attitudes towards talking about traumatic experiences was also demonstrated by anomalies in the relationship between communication with peers about disturbing experiences and communication about negative aspects of work. An interaction was demonstrated between the effects of these two variables on PTSD symptoms that showed that if officers report more talk about negative aspects of work, then the positive effects of talking about disturbing experiences are reduced. This suggests that the relationship between talking about disturbing experiences and

PTSD is dependent upon the way in which those experiences are framed. Positive topics of conversation are negatively related to PTSD and negative topics are related to increased PTSD symptoms. These interpretations of the present results reinforce the need for inquiry into the qualitative aspects of attitudes and peer communication. Such research would require direct observation of the nature of communication between working police officers.

10.5.3 Unmeasured variables.

There are other variables known to affect the trauma-PTSD process that were not included in the present study, especially pre-event variables such as training and preparation, or personality (see Green, 1994 for a review). These variables were excluded in the present study so that social support factors could be focused on in detail. However, other variables that contribute to the development of stress reactions could be influencing the effects of social support. These variables are included in comprehensive biopsychosocial models (e.g. Peterson et al., 1991) which predict these connected influences. Stress resulting from organisational factors is one important variable that has been highlighted during the present study. Separate measurements of these sources of stress should be included in future research.

In the measurement of social support the focus was on support at work and, in particular, the aspects of emotional support that included opportunities to talk about trauma. The measurement of support from outside work was brief and from an organisational perspective. The non-work sources of support were combined into three items which included both family and friends; a very broad category. Nevertheless these sources of support are not unimportant and have been considered briefly by other commentators and researchers, especially in terms of support from spouses (e.g. Alexander & Walker, 1994; Came, Wolff, Howse, Steacy & Thomas, 1989; Duckworth, 1991; Slagle, Reichman, Rodenhauser, Knoedler, & Davis, 1990). Support from outside work was clearly related to PTSD symptoms in the present study and warrants more detailed investigation.

10.5.4 Generalisability

The sample of police officers who volunteered for the present study reflected the distributions in the New Zealand Police on most of the demographic variables that were measured. One important exception was minority ethnic groups. The percentages of officers in the New Zealand Police who identify with different minority groups is not known, but it is believed that groups such as Maori and Pacific Islanders, are represented in greater percentages in the New Zealand Police than was represented in the present sample. Unfortunately the numbers were too low in this sample to make any meaningful comparisons. As these people are an important presence in New Zealand society, it would be worthwhile to 'over-sample' such groups in future studies, to ensure that any systematic cultural differences could be examined.

The low response rate meant that there may be other unknown variables that were responsible for systematic differences between responders and non-responders. Alternatively, those who did not respond could include people who varied in quite different ways on the variables that were measured. For this reason the self-report questionnaire is not the ideal way to survey groups, such as police officers, who have some resistance to completing forms.

10.6 Interventions

The results of the present study suggest that the traumatic experiences that are most likely to be associated with greater psychological and physical symptomatology are those connected with police work itself. These results are supported by longitudinal studies such as that of Beutler, Nussbaum, and Meredith (1988) which show significant changes in psychological and somatic symptoms over time for officers, after joining the police. Police organisations therefore have a responsibility for the welfare of officers who are employed in front line and other stressful duties and there is evidence that the recognition and demonstration of responsibility alone has an impact on health outcomes. McCammon et al. (1988) hold that organisational ownership of the psychological injury resulting from work assignments is the most

important aspect of recovery. The results of the present study also suggest that social support is an important variable that moderates the impact of traumatic experiences. Furthermore, it is support from peers, rather than the immediate supervisor, that is significantly associated with health outcomes related to trauma. These results point towards some areas that would be fruitful to focus on when designing interventions.

Police organisations have recognised the need for support for those individuals who have suffered traumatic experiences. This recognition has usually been expressed in terms of clinical interventions rather than organisational changes. Issues of concern currently are, how effective is the help and support that is provided for police officers and how could this support be developed to increase its effectiveness? The following sections will briefly cover present practices in the New Zealand police and other forces and suggest possibilities for the development of these interventions in the light of recent findings, including the present study.

10.6.1 The debriefing model

The focus of recent post-trauma support in many organisations, and in particular in the New Zealand Police, has been on critical incident debriefing and the provision of counselling services by professionals from outside the organisation (Ford, 1993; Miller & Ford, 1991). Armstrong et al. (1991) have identified five intervention models that include group debriefing following critical incidents. The model that is often adopted or used as a basis for interventions in emergency services is that developed by Mitchell (e.g. Mitchell & Dyregrov, 1993). This model includes two broad categories of intervention. First, on site support services employing peer support personnel and mental health professionals, for individuals showing signs of distress at the site of the emergency. The second is post-incident intervention strategies which include a brief group meeting after the event and a more formal two to three hour debriefing. These are usually run by at least one mental health professional. Follow up may consist of further brief meetings and referrals when necessary. The long formalised debriefing session has become the hallmark of this intervention model and in studies that have evaluated the effectiveness of the

debriefing process using reports from participants (Griffiths & Watts, 1992; Robinson & Mitchell, 1993), the process has been rated as beneficial. The initial relief of stress symptoms has also been demonstrated by McFarlane (1988b) who found that attending a debriefing was followed by reduced acute PTSD. However the same study also showed that attending debriefings did not prevent delayed post-trauma reactivity. Other research that has taken a longer term view has had similar results. Recent studies that have evaluated debriefing using debriefed and non-debriefed groups have found no differences in later psychological symptoms between the two groups following a disaster (Kenardy et al., in press.) and following body handling in the Gulf war (Deahl, Gillham, Thomas, Searle & Srinivasan, 1994). In both studies many of those (although not all) who had received debriefing described it as helpful. That the process is perceived as beneficial by participants is a good reason to continue formal debriefings, but when considering the long term effects on psychological health, results of evaluations show that debriefing alone may not be sufficient. There are already comments in the literature that point to some of the shortcomings of debriefing alone as a cure-all for later psychological sequelae of critical incident stress. These are: procedural and structural problems in police work; difficulties in defining critical incidents; the lack of ongoing support at work; a suspicion of professionals outside the organisation; and the dangers in breaking down defenses that are a healthy coping mechanism. These problems will be described briefly next.

One difficulty that has been commented on by a psychologist working with the New Zealand Police is simply the problem of finding a time when all officers involved in an incident may come together for a meeting, or even contacting all those involved (Ford, 1993). Often those meetings that can be arranged are in separate smaller groups, sometimes days later. The second difficulty is the definition of critical incidents. As has been shown by the results of the present study, not all those incidents defined as critical by the organisation are necessarily associated with long term sequelae, whereas other rare, isolated or chronic stressors are more likely to be associated with symptoms. Ford (1993) again comments on those officers who may "...slip through the trauma policy net" and may not receive the support they need.

The needs of those suffering ongoing traumatic stress may also be missed in this way. A study of those providing services to child sexual abuse victims compared a group of police officers and a group of mental health professionals (Follette, Polusny & Milbeck, 1994). The police group were significantly more distressed than the mental health professionals on all measures of psychological symptoms including trauma specific symptoms. One possible explanation found by the authors was the greater use of personal therapy by the mental health workers. As has been noted in Chapter six, police 'culture' does not generally encourage the seeking of such help, especially from outsiders.

A third problem that is also related to the work 'culture' is the possible lack of ongoing support at work. Officers who attend a debriefing and are encouraged to disclose their experiences and emotions, may not be able to complete the process and be left in a psychologically vulnerable position. Debriefings may last a few hours, but the recovery process may last weeks or months. Not only are officers vulnerable to the negative attitudes of other officers in the work place, but also to subsequent traumatic events or reminders of the original event, such as enquiries, court cases or funerals, which result in additional traumatisation.

The debriefing model does generally include referrals, either by self, mental health professionals working at the debriefing or by welfare officers. However, this has its own problems. As noted by various authors (e.g. Coman, 1993; Evans et al., 1992; Follette et al., 1994) police officers as a group do not tend to consult outside mental health professionals and the present study has shown that there are some groups within the police who are less likely to seek help from mental health professionals than others. The professionals who work at the debriefing itself are likely to be received with suspicion. Mitchell and Dyregrov (1993) warn that mental health professionals who are unknown to emergency workers may be treated with mistrust, resistance and anger. Additionally, these professionals must be sensitive to the needs of the group as the same authors warn, from experience, that the wrong mental health professional at the wrong time may damage rather than help. Deahl et al. (1994) also

suggest that the effectiveness of debriefing is enhanced if delivered by members of the organisation involved in the work, with mental health professionals adopting an educative role. The reliance on outside professionals to provide both group debriefing and individual counselling has its own dangers and may even counter rather than increase support.

Another danger of the imposed nature of the formal debriefing situation is that of the untimely breaking down of healthy defenses. Janik (1992) theorises that denial of traumatic realities allows rescue and emergency workers to cope with the stresses of the work and it is only when the defense becomes rigid or inappropriately applied that the individual is in danger of disorder. Taylor and Frazer (1981) report that among workers retrieving bodies from a major air disaster, the least stressed used psychological defenses of denial, such as dehumanising the bodies. In fact these are commonly used defenses among those who work with bodies (McCarroll et al., 1993) and are now often recognised, along with other traditional defenses such as black humour, as strategies to be encouraged among emergency workers. Although the usual advice is to hold debriefing sessions as soon as possible after the event, there is also concern that premature confrontation of denial in peer group situations only consolidates that denial (Janik, 1992).

Williams (1993) suggests that officers should be encouraged to work through their responses to the traumatic event by talking about the experience with others who went through it. To this end it is suggested that, following debriefing, officers are encouraged to continue to talk about the trauma. However this recommendation does not take into account at least one obstacle to this sort of expression: the effects on those who listen to details of the traumatic experiences of others. Trauma stories may be upsetting or frightening to those who hear them (Brom & Kleber, 1989; Horowitz & Reidbord, 1992) and in fact listening to the traumas of others is traumatic. Pennebaker (1992) cites examples of research showing negative effects for those who hear about the horrible stories of others and reasons that listening to someone who needs to share their experiences often and in detail is burdensome and often avoided.

10.6.2 Peer support

An intervention that has been developed over recent years, particularly in police forces in the United States, is peer support. Peer support appears to be a useful model that may be used to supplement and help improve the effectiveness of the debriefing model. The results of the present study point to some problems with the utilisation of mental health professionals and show the importance of support at work from peers, and in particular support that allows individuals to talk about trauma in a positive light. The peer support model encourages officers to talk about their difficulties with trained peer supporters who are sympathetic and supportive members of the work group. These officers are not expected to be psychologists but support persons primarily there as someone to talk to (Violanti, in press b). The peer supporters may also help educate officers about normal stress reactions which are framed as positive coping resources, rather than pathology. Such a system has the advantages that group members and not outsiders are the primary providers of support; the support offered is not constrained to a particular point in time, nor particular incidents, but rather available as the need arises; and it does not require emergency workers to abandon defenses that are healthy coping mechanisms in the job context, nor impose their trauma stories on unwilling others.

Peer support groups are formally established by the organisation which provides training for carefully selected staff members. Approaches to the provision and management of peer support groups is described in more detail in Reese and Goldstein (1986), Reese and Horn, (1988) or Paton (1994a).

10.7 Future Research

10.7.1 Longitudinal studies

The results of the present study have promising implications for future study. As an exploratory test of specific aspects of social support as moderators of trauma, the results are encouraging, but owing to the limitations of cross-sectional design longitudinal study is required to test the role of social support.

First, a prospective study could test the relationships in time between specific traumatic experiences, subsequent emotional support and opportunities for disclosure, and later psychological and physical health outcomes. This type of study would be a useful method of testing Horowitz' stage model of traumatic stress reactions. Measures of initial post trauma stress reactions would be used to compare with later psychological health outcomes and social support as well as other intervening variables. This approach would also be an opportunity for the closer study of how social support actually operates in the work place; for example an analysis of the moderating role of disclosure in regard to psychological outcomes.

Second, the effects of chronic exposure to traumatic experiences in the police could be studied by following the experiences of officers from the time they enter the police force as recruits. Such a study would be able to provide useful information regarding such outcomes and processes as the effects of certain traumatic experiences, the changes in officers' perceptions of disturbing experiences over time, and normative data concerning baseline levels of psychological symptoms and reactivity in police officers. Social support and other intervening variables would also be examined in more detail, including qualitative changes over time.

10.7.2 Development of social support and trauma measures

Before such longitudinal research is undertaken, the measures used to capture levels of specific aspects of social support and in particular the measures developed for the present study must be improved. The limitations of the measures of the ease of talking about trauma and attitudes to expressing emotions in the work place have been discussed above. As these specific aspects of social support in the work place are related to health outcomes following traumatic experiences, future research could focus on developing the validity and reliability of these measures. A qualitative study of work place interactions among police officers, such as observations or unstructured interviews, would be valuable, especially for a better understanding of the attitudes to expressing emotions.

A qualitative approach could also be valuable in other areas of concern such as the measurement of trauma. A closer study of the beliefs of police officers and the meanings that they attach to different aspects of disturbing incidents would be useful in understanding the salient psychological aspects of traumatic experiences. For example, interviews with police officers in conjunction with the present study revealed that feelings of control and belief in protection by a radio or a uniform are part of police officer's belief in their own safety. It is possible according to theories of shattered assumptions (Janoff-Bulman, 1992) that the destruction of these protective beliefs results in psychological disorder.

10.7.3 Other variables

The interaction of organisational stressors with traumatic stressors is an area of concern that has been highlighted in the present study. In future research in police organisations this and other sources of stress should not be ignored when assessing outcomes. There are also other groups of people related to police organisations who have not been covered in the present study but who nevertheless deserve attention. The importance of families of police officers as important potential sources of support has already been discussed. The impact of traumatic stress on the families of police officers must also be taken into account and provided for by the organisation. The impact of traumatic experiences on non-sworn staff (e.g. secretarial, clerical, radio operators) were also not included in the present study but researchers (e.g. Taylor & Frazer, 1982) have demonstrated that there is a 'ripple' effect of traumatic incidents in which people are effected even though they may not be present at the incident itself. Other variables which were addressed in the present study but deserve more attention are gender and ethnicity. As described in part one, important differences in the effects of stress between males and females and some ethnic groups have been found. The numbers in this study were not sufficient to examine these differences, and the lack of effect for gender could have been the result of low numbers. Future studies could take this difficulty into account, perhaps by 'over-sampling' from groups of interest.

10.8 Summary of the Main Findings

10.8.1 Trauma and PTSD in the Police

The numbers of traumatic experiences that a police officer has experienced are related to the levels of posttraumatic stress disorder symptoms and physical health symptoms. The more experiences that an officer reports then the more likely they are to have a greater number of symptoms of greater severity. In the New Zealand police, the prevalence of PTSD symptoms is similar to that of other groups in the community who have suffered traumatic experiences, although not as high as groups of combat veterans. The traumatic experiences that are affecting the health of police officers are most likely to have occurred while they were at work. However, the nature of the experiences themselves constitute a broad range of types and these types are difficult to classify in terms of their likelihood of contributing to later disorder. The types of experiences that were identified as more likely to contribute to PTSD symptoms were not necessarily those that have been identified as warranting attention. For example, ongoing distress (and not just sexual abuse work) was identified as being a major stressor. The psychological outcomes of trauma may culminate in disorder but there are many other levels at which traumatic experiences may adversely affect the health of working police officers. Officers may be affected by a range of psychological symptoms that are also related to physical health outcomes.

10.8.2 Theories of social support and PTSD

This study has provided support for a model of PTSD aetiology that includes social support as a buffer of traumatic stress at work. The notion that there are support functions that are specifically related to a stressor can explain such anomalies in social support research as 'reverse buffering' in which support is detrimental to health. The types of support that were buffers of trauma in this study support the specificity hypothesis. The ease of talking about trauma in the work place, the attitudes to expressing emotion, emotional support from peers, and emotional support from outside work, are the aspects of support that were specifically related to people's need to talk about the emotions associated with traumatic experiences. These findings,

based upon a theoretical approach, extend the current evidence for the preventive role of social support in PTSD research towards a focus on the specific aspects of support which are salutary.

10.8.3 Practical implications

There are several implications for organisations in the present findings. As already established through work in other police organisations, additive traumatic stress has a significant effect on the psychological and physical health of working police officers. When considering the effects of traumatic stress, the effects of organisational stressors must be taken into account, as these may interact with trauma to heighten the adverse effects of trauma. In terms of prevention, emotional support is an important factor intervening between the traumatic experience and the health outcomes. A police officer's peers are a very important source of this support and support from family and friends should also be considered.

These findings support those of other researchers and practitioners in the field of occupational stress, and extend the search for the active components of social support in the area of post-trauma stress in particular. There are implications for ongoing provision of support for workers at risk of the effects of trauma. Furthermore the results suggest a foundation for further research in the area of social support as a moderator of trauma.

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Appendix A

PILOT STUDY

Aim

A pilot survey was carried out to test the acceptability of the items to a group of working police officers and to check for flaws in the questionnaire design.

Method

Phase One (5 May 1994).

21 questionnaires were distributed by the District Staff Senior Sergeant to officers in Palmerston North and Levin, with a covering letter and information sheet (see Appendix 2). An envelope with a free-post return address, so that the questionnaire could be sent directly to the researcher, was included

The questionnaire included demographic items, an attitude measure, the contents of communication measures for supervisors and peers, the functional social support measure, health measures, the PILL, and self rated health, and the measure of sources of trauma. These measures were all as included in the final questionnaire (see chapter 8).

The PTSD measure used in the initial phase of the pilot study was the newly developed Penn Inventory. Chosen because it was designed specifically for assessing PTSD symptoms in general populations, the Penn compares well in validation trials with the Mississippi Scale.

The author has published the results of three preliminary studies investigating the psychometric properties of the Penn (Hammarberg, 1992) which give initial support to the value of using the Penn Inventory in general settings. A summary of

diagnostic accuracy from the three phases of testing, shows that the proportion of those with PTSD correctly identified was .95; the proportion of those with a negative diagnosis (or undiagnosed) correctly identified was .89; the overall proportion of positive and negative diagnoses that were accurately predicted was .93. Although these values depended in part on a prevalence rate of 68% of PTSD in the sample, the results also showed substantive cross-validation between groups. The possibility that the instrument is limited in settings where prevalence is low has yet to be tested empirically.

In the third study the Penn was also compared directly to the Mississippi Scale for Combat-related PTSD on US Army Veteran groups. Both measures had very similar 'hit rate' results when compared to clinical diagnoses of PTSD for the subjects, and the Pearson product-moment correlation between the two measures, across 77 veterans, was .85.

Reliability and internal consistency of the measure also seems acceptable. An initial overall test-retest reliability score was .96. A high coefficient alpha of .94 was repeated over the first two phases of testing and the average of each item's correlation with the uncorrected total score was also similar over the two phases: .75 and .74.

Each of the 26 items of the Penn Inventory comprises four sentences, the scale numbers of which range from 0 to 3. It is scored by summing the values for items 1 through 26. The summary score, which ranges from 0 to 78, measures the strength of PTSD, given the determination of a traumatic stressor event in the person's history. In the validation studies a cutoff score of 35 or above was used for estimates of diagnostic accuracy, and the same cutoff score was used in the present study to assess PTSD: those who scored 35 or above were designated PTSD cases.

Participants.

A cross-section sample of officers from two stations was calculated by the Regional

Staff Officer who proposed the following selection:

Palmerston North: 3 NCOs (sergeants); 5 frontline section staff (constables); 2 armed offenders squad members (1 community constable, 1 detective constable); 4 from CIB (2 detective constables and 1 detective sergeant from the sexual abuse team).
Levin: 2 NCOs (sergeants); 4 frontline constables; 1 detective constable.

Participants were chosen by the District Staff Senior Sergeant to fit the selection criteria of the list above. His choice of individuals was often based on their likelihood of filling in a questionnaire e.g. people doing university study or those with a wide range of experiences. Police staff had often expressed concern about the likely willingness of police officers to fill in any questionnaires, based on their resentment of the amount of paperwork that their work required them to do, and on a generally cynical attitude in the Police towards this type of research. Because the primary aim of the pilot study was to get some feedback on the face validity of the questionnaire, this biased sample seemed the best way to ensure a good response rate from such a small number of participants.

In fact the response was excellent. 18 of the 21 surveyed replied promptly, and the extra comments on five of the questionnaires were helpful and supportive.

Results

The results show good variability on most of the variables. The means and standard deviations for all continuous variables are shown in Table 1.1. The percentages for each nominal variable item are shown in Table 2.1.

The internal consistency of each measure in the study was tested by computing coefficient alpha. The alpha coefficients for the social support measures showed acceptable reliability as most ranged from .82 to .95. Only Attitude showed poor reliability at .63. The PILL showed acceptable reliability at alpha = .85, and the Penn Inventory was less acceptable at alpha = .73.

Table A1
Means and Standard Deviations for Each Continuous Variable in Phase 1 of the Pilot Study

	N	Mean	SD	Range
Age	18	33.50	7.81	24-53
Service	18	10.17	6.72	2-24
Self-rated health	18	5.66	.84	4-7
Attitude	18	5.17	1.34	2-7
Supervisor social support	18	3.21	1.08	1-5
Peer social support	18	3.21	.43	2.5-4.3
Family social support	18	4.38	.68	2.7-5.0
Peer disturbing comm.	18	2.89	.86	1.7-4.7
Peer personal comm.	18	3.33	.51	2.5-4.3
Peer negative comm.	18	3.63	.68	2-5
Peer positive comm.	18	3.21	.60	2.3-4.5
Supervisor dist. comm.	18	2.20	.86	1-4.3
Supervisor personal comm.	18	2.75	.70	1-4
supervisor negative comm.	18	2.63	.76	1-4.5
supervisor positive comm.	18	2.64	.82	1-4.3
Penn Inventory	14	18.00	6.41	7-28
PILL	18	24.39	17.77	2-55
Trauma	17	4.82	2.92	0-9
Multiple Trauma	17	7.29	4.60	0-15

Table A2
Biographic and Police Service Variables for Phase 1 of the Pilot Study.

	Number	Percentage
Gender	18	
Males	13	72.2
Females	5	27.8
Marital Status	17	
Never married	1	5.6
Married	15	83.3
Separated or divorced	3	5.6
Ethnic group	17	
Maori	3	16.7
European	14	77.8
Educational qualification	18	
No qualifications	1	5.6
School qualifications	11	61.1
Tertiary qualifications	6	33.3
Rank	18	
Constables	12	66.7
Sergeants	6	33.3
Branch	18	
General Duties	12	66.7
CIB	6	33.3
Trauma Policy Debriefing - Yes	1	5.6
Consulted a Psychologist - Yes	4	22.2

When the results for Attitude were examined, there was an observable difference between the scores for two of the items (1 and 3) compared with the other two items (2 and 4). For example scores on items 1 and 3 together ranged from 0 to 3, whereas those of items 2 and 4 ranged from 2 to 4. When tested together, coefficient alpha for items 1 and 3 was .79. These items were those that asked about the respondent's own attitudes towards others expressing emotions, and these were rated higher. When asked about the possibility of expressing their own emotions, the respondents tended to rate this lower. However these two items (2 and 4) were not so consistent, at $\alpha = .64$. These results themselves are not reliable owing to the low numbers in the study and the questionable value of an alpha coefficient calculated on only two items. However, these possible differences were considered an interesting aspect of the attitude measure.

Changes to the questionnaire

The results of the first phase led to minor changes in the questionnaire and two changes to the measures.

i. Questionnaire Changes

The coding boxes were altered and the wording of one item (area of work) was changed to make it more clear.

One cover sheet was returned complete with instructions from the supervisor for the officer to comply promptly and return the questionnaire to him. This led to an emphasis in the instructions on the return of the questionnaire directly to the researcher by external post (using the freepost envelope).

ii. Attitudes Measure

The results described above led to the inclusion of two extra items in the attitudes measure. This was an attempt to capture the respondent's direct assessment of how likely they would be to talk about their traumatic experiences in their work place. It was also expected that increasing the number of items would increase internal

consistency. These items were based on the disclosure literature described in chapter 4 and are described in chapter 8, as items measuring the ease of talking about trauma at work.

iii. PTSD measure.

The Penn Inventory was the instrument in this study with the highest number of missing data (4 of the respondents missed at least 1 item). There were also concerns about the relevance of some items such as one about spirituality.

This instrument also demonstrated lower internal consistency in this sample than the validation trials. As the instrument was tested on a high PTSD population, there is little information yet about its suitability for a general sample. Hammarberg (1992) had found that the Penn did not differentiate well on the lower end of the scale.

Because this was a relatively untried measure, it was decided to test it against the Mississippi Civilian Mississippi, another new measure which has demonstrated good validity in its military version (see chapter 8). Accordingly an unanticipated second phase of the pilot was launched.

Method

Phase Two (1 June 1994).

The Staff Senior Sergeant had kept a list of all the officers who had received a questionnaire in Palmerston North and he expected that the officer in Levin would remember who those questionnaires had gone to. Consequently, a second questionnaire with the same cover sheet but including only the Mississippi Civilian PTSD measure was distributed to the same 21 officers. A cover letter was included (see Appendix 2) that explained the reason for the second questionnaire, replied to some common types of comments that had been made, and also asked for volunteers for the interviews, that were part of a second study.

Once again there was an excellent response to these requests: 20 out of 21

responded.

The second questionnaire was coded to add to the information from the first by matching the signatures on the consent forms. (This proved an excellent way to maintain anonymity, even with the researcher, as the signatures were distinctive but illegible.) However, there were four new participants in the sample (3 of the previous participants were not included), so that only 16 were in the final sample of complete questionnaires.

Results

There was no missing data on the Civilian Mississippi from this small sample. The items are more closely connected to DSMIII-R which provides better face validity.

The Civilian Mississippi was well correlated with the Penn ($r(12) = .86, p < .001$) but coefficient alpha showed higher internal consistency for this sample at .93. Scores ranged from 49 to 116 ($N = 16, M = 76.20, SD = 17.67$).

At the time of the pilot, the results of a recent study employing a civilian population (Eustace, 1994) came to hand. Therefore, owing to improved face validity, internal consistency and the opportunity for comparison with a civilian sample, it was decided to use the Civilian Mississippi as the PTSD measure (see chapter 8).

Appendix B

INFORMATION TO PARTICIPANTS IN THE PILOT STUDY



**MASSEY
UNIVERSITY**

Private Bag 11222
Palmerston North
New Zealand
Telephone +64-6-356 901
Facsimile +64-6-350 561

**FACULTY OF
SOCIAL SCIENCES**

DEPARTMENT OF
PSYCHOLOGY

5 May 1994

Dear Participant

This package is part of a pilot study to precede a major survey of the effects of work trauma on police personnel. We hope you will be able to take the time to assist us in evaluating the questionnaire which will be used in the main survey along with interviews of individual Police Officers.

Enclosed with this letter is an information sheet about the study and your rights as a participant, the questionnaire itself, and a free-post envelope. You are requested to complete the questionnaire and return it to me, in the envelope.

We would also appreciate any comments that you care to make (write anywhere on the questionnaire) about any items or about the study in general. If you have any questions, or concerns about the study, please phone me at Massey University on: (06) 350 4146.

Thank you for your help.

Yours faithfully

Christine Stephens.



**MASSEY
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**FACULTY OF
SOCIAL SCIENCES**

**DEPARTMENT OF
PSYCHOLOGY**

POST-TRAUMA RESEARCH INFORMATION SHEET

Researchers from the Psychology Department of Massey University are conducting a survey on the effects of traumatic incidents and the supportive attitudes of fellow officers and supervisors. The researchers are Associate Professor Nigel Long and PhD student, Christine Stephens.

WHAT IS THE PRESENT STUDY ABOUT?

The present study will investigate the effects of traumatic incidents on the health of police officers, the types and numbers of extraordinary events that are traumatic, and what types of social support there are within the Police organisation that may help counter the adverse effects of trauma.

WHAT WILL THE INFORMATION BE USED FOR?

The results of the study will be available to the Police and reported by circular to participants and by police publication. The information will be useful to supervisors, personnel managers, welfare officers and the Police Association. It will provide important knowledge about the prevalence of stress symptoms in police on active duty; about the types of traumatic events that are most likely to have harmful after effects; and, because traumatic events are an unavoidable part of police work, it will contribute towards work on preventing the development of stress symptoms in working police officers.

ELIGIBILITY

You are eligible to take part in the study if you are a sworn member of the New Zealand Police.

WHAT YOU WILL BE ASKED TO DO

You will be asked to complete a single questionnaire which should take 30 to 40 minutes of your time. The questionnaire asks for general information about yourself, your experiences of traumatic events, your health, and your perceptions of the quality of the social support that you receive, both at work and outside work.

YOUR RIGHTS AS A PARTICIPANT:

All participants

- * have the right to contact the researchers at any time during the research to discuss any aspects of the study.
- * have the right to refuse to answer any question, or withdraw from the study at any time.
- * provide information on the understanding that it is completely in confidence to the researchers, to be used only for the purposes of the research. It will not be possible to identify individuals in any reports of the results.
- * have the right to receive information about the results of the study on its completion.



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**FACULTY OF
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DEPARTMENT OF
PSYCHOLOGY

31 May 1994

Dear Participant

Thank you very much for your help in completing a pilot questionnaire for the police trauma study. We had a great response rate and the comments we received were most helpful and supportive. One of the problems that we were able to pinpoint, thanks to the pilot, was that one of the measures that we used had some unsatisfactory questions in it. Consequently we have searched for a better measure and we would like to test this new set of questions on the same group of people who contributed to the original pilot.

I hope that you will not mind completing this second (brief) questionnaire and returning it straight to me (for reasons of confidentiality) in the enclosed free-post envelope.

Another of the difficulties that has been highlighted by the pilot and my informal talks with police officers is that trauma is not the main source of stress in police work and that problems such as dealing with the organisation, the justice system, or the shift system can be very distressing. While we are increasingly mindful of these other important sources of stress, this particular study has been designed to focus on trauma as a source of stress in Police work.

Thank you also for expressions of interest in the results of the study. I will not be analysing the pilot in any great detail for general trends or comparisons, because of the small number of participants. However we will make a summary of the results of the major study available to all those who took part.

Following the survey by questionnaire, I will be recording interviews with individual officers for a more in-depth analysis of attitudes towards talking about trauma. If you are interested in taking part in one of these interviews, please read the new information sheet enclosed and complete the form. If you are not, I will be grateful if you just complete the questionnaire and dispose of the information sheet.

Once again thank you for all your help in this project.

Yours faithfully

Christine Stephens.

Appendix C

INFORMATION TO PARTICIPANTS IN THE MAIN STUDY



**MASSEY
UNIVERSITY**

Private Bag 11222
Palmerston North
New Zealand
Telephone 0-6-356 909

29 July 1994

Dear Participant

This package is part of a major survey of the effects of work trauma on police personnel. We hope you will be able to take the time to assist us by reading the information enclosed and completing the questionnaire.

Enclosed with this letter is an information sheet about the study and your rights as a participant, the questionnaire itself, and a free-post envelope. You are requested to complete the questionnaire and return it, **directly to me**, in the envelope (this will ensure that your responses are anonymous).

If you have any questions, or concerns about the study, please phone me at Massey University on: **(06) 350 4146**.

Thank you for your help.

Yours faithfully

A handwritten signature in cursive script, appearing to read 'Christine Stephens'.

Christine Stephens.

16 September 1994



POLICE TRAUMA QUESTIONNAIRE

We have had a very gratifying response to our Police Trauma Questionnaire and we are happy to receive so much support for this study that will have important benefits for all police officers. Thank you very much for your time if you have already completed your questionnaire and returned it to me.

We appreciate that you have a very busy schedule but to get an understanding of the patterns of trauma for all police we need responses from as many officers as possible, even if they are not directly concerned with the effects of trauma. If you have not yet completed your survey please consider doing it soon. The questions may look long, but most responses require you to only circle a number.

In all, the more officers who complete questionnaires, the more accurate our results will be. The data from this study will be invaluable to the Police Association and the organisation, for use in planning prevention and welfare policies.

We know that filling out forms is the least favourite occupation of many officers, so once again I would like to say how much we appreciate your help in this work.

If you have mislaid your questionnaire or have not received one yet, and would like to complete it, please give me a phone call.

Christine Stephens (Ph. (06) 350 4146)

Appendix D

QUESTIONNAIRE USED IN THE MAIN STUDY

POLICE TRAUMA STUDY

Participant Consent:

I have read the information sheet about this study and understand the details of the study. I understand that I may ask questions at any time and decline to answer any particular questions in the questionnaire. I also understand that I am free to withdraw from the study at any time. I agree to provide the researchers with information on the understanding that it is completely confidential, and I will not be identified in any reports from the study.

Signed _____

Date _____

Please Read the Following Instructions Carefully.

All the information you give us is in confidence and will be used only for the purposes of the study.

Please attempt every question and be careful not to skip pages.

There are no right or wrong answers; we want the response that is best for you.

It is important that you give your own answers to the questions. Please do not discuss your answers with others.

Do not linger too long over each question; usually your first response is best.

--	--	--	--	--

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

How old are you? _____years

--	--

What is your gender?

Male ☐ Female ☐

--

What is your present marital status?

- Never married 1
- Married (including defacto) 2
- Separated or divorced 3
- Widowed 4

--

What ethnic group do you identify most with?

- New Zealander of Maori descent 1
- New Zealander of European descent 2
- New Zealander of Pacific Island descent 3
- Other, please specify _____ 4

--

What is your highest educational qualification?

- No school qualification 1
- School certificate passes 2
- School qualifications, University
entrance and above 3
- Trade certificate, Professional
certificate or diploma 4
- University degree or diploma 5

--

Length of service in the New Zealand Police?_____years.

--	--

What is your Rank?

- Superintendent 1
- Inspector 2
- Senior Sergeant 3
- Sergeant 4
- Senior Constable 5
- Constable 6
- Recruit 7

--

Do you hold a Detective qualification?

Yes ☐ No ☐

--

Which Branch do you work for?

- General Duties 1
- CIB 2
- Traffic Safety 3

☐

Have you ever been involved in a debriefing under the trauma policy?

- Yes ☐
- No ☐

☐

Have you ever consulted a psychologist for work related stress other than under the trauma policy?

- Yes ☐
- No ☐

☐

The sets of questions that make up the rest of the questionnaire are to explore your feelings and reactions to the possibly traumatic aspects of police work. It would be most helpful to this study if you could answer each section as carefully as possible, but remember that if any part of the questionnaire disturbs you, you are not obliged to answer.

The following are descriptions of situations that might occur at your work. Please circle the number of the alternative that you consider is most likely to occur at your station.

A. A particular officer talks a lot one week about his fear of stopping and approaching traffic offenders. Would you be more likely to:

- 1. Avoid him completely when possible.
- 2. Make jokes about his fear.
- 3. Listen as much as possible and sympathise.

☐

B. You are involved in a crowd control incident that turns nasty and feel afraid. Afterwards would you be inclined to:

- 1. Keep your fears completely to yourself at work.
- 2. Talk about how you were afraid only if someone else does.
- 3. Discuss your fears openly with your friends at work

☐

C. An officer is upset and tearful as she describes her feelings about a road accident in which a cyclist was badly mutilated. Would you be more likely to:

- 1. Feel embarrassed and leave the room as soon as possible.
- 2. Stay and try to change the subject to a more cheerful topic.
- 3. Stay in the room and encourage the officer to talk about it.

☐

D. You are involved in a case in which a baby was killed by negligence and you have a lot of different feelings about it. Would you be most comfortable talking to fellow officers about:

- 1. Feelings of anger against those responsible.
- 2. A sense of protectiveness and concern for children’s safety.
- 3. Fears for the safety and well-being of children in your own family.

☐

These are questions about the sorts of support that you may receive from different people. For each answer below please circle the number that is best for you.

- 1 = very little
- 2 = a little
- 3 = some
- 4 = a lot
- 5 = a great deal

1. How much does each of these people go out of their way to do things to make your work life easier for you?

- A. Your immediate supervisor 1 2 3 4 5
- B. Other people at work 1 2 3 4 5
- C. Your spouse or partner, friends and relatives 1 2 3 4 5

2. How easy is it to talk with each of the following people?

- A. Your immediate supervisor 1 2 3 4 5
- B. Other people at work 1 2 3 4 5
- C. Your spouse or partner, friends and relatives 1 2 3 4 5

3. How much can each of these people be relied on when things get tough at work?

- A. Your immediate supervisor 1 2 3 4 5
- B. Other people at work 1 2 3 4 5
- C. Your spouse or partner, friends and relatives 1 2 3 4 5

4. How much is each of the following people willing to listen to your personal problems?

- A. Your immediate supervisor 1 2 3 4 5
- B. Other people at work. 1 2 3 4 5
- C. Your spouse or partner, friends and relatives 1 2 3 4 5

The following is a list of 12 statements describing possible topics of conversation. We would like you to judge how often you talk about these subjects with your fellow POLICE OFFICERS and circle the number that best describes that frequency.

- 1 = never
- 2 = seldom
- 3 = occasionally
- 4 = often
- 5 = always

We discuss things that are happening in our personal lives	1 2 3 4 5	<input type="checkbox"/>
We talk about off the job interests that we have in common	1 2 3 4 5	<input type="checkbox"/>
We share personal information about our backgrounds and families	1 2 3 4 5	<input type="checkbox"/>
We talk about off the job social events	1 2 3 4 5	<input type="checkbox"/>
We talk about jobs that have been personally distressing	1 2 3 4 5	<input type="checkbox"/>
We talk about how we dislike some parts of our work	1 2 3 4 5	<input type="checkbox"/>
We talk about the bad things about our work	1 2 3 4 5	<input type="checkbox"/>
We talk about problems in working with the public	1 2 3 4 5	<input type="checkbox"/>
We talk about how this station is a lousy place to work	1 2 3 4 5	<input type="checkbox"/>
We discuss parts of the job that have been upsetting	1 2 3 4 5	<input type="checkbox"/>
We talk about the good things about our work	1 2 3 4 5	<input type="checkbox"/>
We share interesting ideas about police work	1 2 3 4 5	<input type="checkbox"/>
We talk about how this station is a good place to work	1 2 3 4 5	<input type="checkbox"/>
We talk about the rewarding things about being a police officer	1 2 3 4 5	<input type="checkbox"/>
We discuss situations on the job that have been terrifying	1 2 3 4 5	<input type="checkbox"/>

Now we would like you to consider the same statements and judge how often you talk about the subjects with your SUPERVISOR. Again circle the number that you consider to be the close frequency.

- 1 = never
- 2 = seldom
- 3 = occasionally
- 4 = often
- 5 = always

We discuss things that are happening in our personal lives 1 2 3 4 5

We talk about off the job interests that we have in common 1 2 3 4 5

We share personal information about our backgrounds and families 1 2 3 4 5

We talk about off the job social events 1 2 3 4 5

We talk about jobs that have been personally distressing 1 2 3 4 5

We talk about how we dislike some parts of our work 1 2 3 4 5

We talk about the bad things about our work 1 2 3 4 5

We talk about problems in working with the public 1 2 3 4 5

We talk about how this station is a lousy place to work 1 2 3 4 5

We discuss parts of the job that have been upsetting 1 2 3 4 5

We talk about the good things about our work 1 2 3 4 5

We share interesting ideas about police work 1 2 3 4 5

We talk about how this station is a good place to work 1 2 3 4 5

We talk about the rewarding things about being a police officer 1 2 3 4 5

We discuss situations on the job that have been terrifying 1 2 3 4 5

The following are statements which could describe thoughts you may have had in the last month. 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	Slightly	Some what	Very	Extremely
true	true	true	true	true

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

1	2	3	4	5
Not at all	Slightly	Somewhat	Very	Extremely
true	true	true	true	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 I have no feelings. ☐

1	2	3	4	5
Not at all true	Slightly true	Somewhat true	Very true	Extremely true

Lately, I have felt like killing myself.

1	2	3	4	5
Not at all	Slightly	Somewhat	Very	Extremely
true	true	true	true	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	Rarely	Sometimes	Very	Almost
true	true	true	true	always true

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

1	2	3	4	5
Not at all	Rarely	Somewhat	Very	Extremely
true	true	true	true	true

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

1	2	3	4	5
Never	Rarely	Sometimes	Very	Always
true	true	true	true	true

My daydreams are very real and frightening.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very frequently
true	true	true	true	true

I have found it easy to keep a job.

1	2	3	4	5
Not at all	Slightly	Somewhat	Very	Extremely
true	true	true	true	true

I have trouble concentrating on tasks. ☐

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very
true	true	true	true	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 of 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 much so

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
true true true true always true

I have a hard time expressing my feelings, to the people I care about.

1 2 3 4 5
Not at all Rarely Sometimes Frequently Almost
true true true true always 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
true true true true always 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
true true true true always true

I feel "superalert" or "on guard" much of the time.

1 2 3 4 5
Not at all Rarely Sometimes Frequently Almost
true true true true always 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

The next set of questions is about your general health. Please indicate how much each of the following problems have bothered or disturbed you during the last month. Circle only one number for each item. If you haven't been bothered by the problem circle 0. If the problem has been an extreme bother, then circle 4 and so on.

	0 not at all	1 a little	2 moderately	3 quite a bit	4 extremely
Eyes water	0	1	2	3	4
Itching or painful eyes	0	1	2	3	4
Ringing in ears	0	1	2	3	4
Temporary deafness or hard of hearing	0	1	2	3	4
Lump in throat	0	1	2	3	4
Choking sensations	0	1	2	3	4
Sneezing spells	0	1	2	3	4
Running nose	0	1	2	3	4
Congested nose	0	1	2	3	4
Bleeding nose	0	1	2	3	4
Asthma or wheezing	0	1	2	3	4
Coughing	0	1	2	3	4
Out of breath	0	1	2	3	4
Swollen ankles	0	1	2	3	4
Chest pains	0	1	2	3	4
Racing heart	0	1	2	3	4
Cold hands or feet even in hot weather	0	1	2	3	4
Leg cramps	0	1	2	3	4
Insomnia or sleep problems	0	1	2	3	4
Toothaches	0	1	2	3	4
Upset stomach	0	1	2	3	4
Indigestion	0	1	2	3	4
Heartburn	0	1	2	3	4
Severe pains or cramps in stomach	0	1	2	3	4
Diarrhoea	0	1	2	3	4
Constipation	0	1	2	3	4

	0	1	2	3	4
	not at all	a little	moderately	quite a bit	extremely
Haemorrhoids	0	1	2	3	4
Swollen joints	0	1	2	3	4
Stiff muscles	0	1	2	3	4
Back pains	0	1	2	3	4
Sensitive or tender skin	0	1	2	3	4
Face flushes	0	1	2	3	4
Severe itching	0	1	2	3	4
Skin breaks out in rash	0	1	2	3	4
Acne or pimples on face	0	1	2	3	4
Acne or pimples other than face	0	1	2	3	4
Boils	0	1	2	3	4
Sweat even in cold weather	0	1	2	3	4
Strong reactions to insect bites	0	1	2	3	4
Headaches	0	1	2	3	4
Sensation of pressure in head	0	1	2	3	4
Hot flushes	0	1	2	3	4
Dizziness	0	1	2	3	4
Feel faint	0	1	2	3	4
Chills	0	1	2	3	4
Numbness or tingling in any part of body	0	1	2	3	4
Twitching of eyelid	0	1	2	3	4
Twitching other than eyelid	0	1	2	3	4
Hands tremble or shake	0	1	2	3	4
Stiff joints	0	1	2	3	4
Sore muscles	0	1	2	3	4
Sore throat	0	1	2	3	4
Sunburn	0	1	2	3	4
Nausea	0	1	2	3	4

Compared to the person in excellent health, how would you rate your health at the present time?

☐

- Terrible 1
- Very poor 2
- Poor 3
- Fair 4
- Good 5
- Very good 6
- Excellent 7

A traumatic event is any incident which is outside your normal range of experiences. Some people only ever have one or two traumatic experiences in a lifetime while some have many more.

Listed below are a few traumatic experiences which may have happened to you at some time in your life, either at work or otherwise.
After the following questions please circle the numbers that are beside the answers that are most accurate for you.

1. Did you ever serve in military combat?

☐
1. NO (Go to the next question)

2. YES (Please continue)

- Did this happen...

☐
1. Once

2. More than once

- When did this happen? (If it happened more than once, please give the last time).

☐
- <6 mths ago
1

6-12 mths ago
2

1-5yrs ago
3

> 5 yrs ago
4

- Was this before or after you joined the police?

☐
- Before
1

After
2

2. Did anyone ever take something from you by force or threat of force, such as in a robbery, mugging or hold-up?

1. NO (Go to the next question)

2. YES (Please continue)

Did this happen...

1. Once

2. More than once

When did this happen? (If it happened more than once, please give the last time).

<6 mths ago	6-12 mths ago	1-5yrs ago	> 5 yrs ago
1	2	3	4

Was this before or after you joined the police?

Before	After
1	2

Did this happen to you while you were on duty as a police officer?

Yes	No
1	2

3. Have you ever been assaulted, injured or had your life placed under threat by another person?

1. NO (Go to the next question)

2. YES (Please continue)

Did this happen...

1. Once

2. More than once

When did this happen? (If it happened more than once, please give the last time).

<6 mths ago	6-12 mths ago	1-5yrs ago	> 5 yrs ago
1	2	3	4

Was this before or after you joined the police?

Before	After
1	2

Did this happen to you while you were on duty as a police officer?

Yes	No
1	2

4. Did anyone ever make you have sex by using force or threatening to harm you? This includes any type of unwanted sexual activity. ☐

- 1. NO (Go to the next question)
- 2. YES (Please continue)

Did this happen... ☐

- 1. Once
- 2. More than once

When did this happen? (If it happened more than once, please give the last time). ☐

- | | | | |
|-------------|---------------|------------|------------|
| <6 mths ago | 6-12 mths ago | 1-5yrs ago | >5 yrs ago |
| 1 | 2 | 3 | 4 |

Was this before or after you joined the police? ☐

Before	After
1	2

Did this happen to you while you were on duty as a police officer? ☐

Yes	No
1	2

5. Did you ever suffer injury or property damage because of fire? ☐

- 1. NO (Go to the next question)
- 2. YES (Please continue)

Did this happen... ☐

- 1. Once
- 2. More than once

When did this happen? (If it happened more than once, please give the last time). ☐

- | | | | |
|-------------|---------------|------------|------------|
| <6 mths ago | 6-12 mths ago | 1-5yrs ago | >5 yrs ago |
| 1 | 2 | 3 | 4 |

Was this before or after you joined the police? ☐

Before	After
1	2

Did this happen to you while you were on duty as a police officer? ☐

Yes	No
1	2

6. Did you ever suffer injury, evacuation, or property damage because of severe weather or either a natural or man-made disaster?

1. NO (Go to the next question)
2. YES (Please continue)

Did this happen...

1. Once
2. More than once

When did this happen? (If it happened more than once, please give the last time).

< 6 mths ago	6-12 mths ago	1-5yrs ago	> 5 yrs ago
1	2	3	4

Was this before or after you joined the police?

Before	After
1	2

Did this happen to you while you were on duty as a police officer?

Yes	No
1	2

7. Did a police officer you knew well ever die because of an accident, homicide, or suicide?

1. NO (Go to the next question)
2. YES (Please continue)

Did this happen...

1. Once
2. More than once

When did this happen? (If it happened more than once, please give the last time).

< 6 mths ago	6-12 mths ago	1-5yrs ago	> 5 yrs ago
1	2	3	4

How did that person die? Was it an ...

Accident	homicide	or suicide?
1	2	3

Was this before or after you joined the police?

Before	After
1	2

Did this happen to you while you were on duty as a police officer?

Yes	No
1	2

IN CONFIDENCE

8. Apart from fellow police officers, did a close friend or family member ever die because of an accident, homicide, or suicide? ☐

- 1. NO (Go to the next question)
- 2. YES (Please continue)

Did this happen... ☐

- 1. Once
- 2. More than once

When did this happen? (If it happened more than once, please give the last time). ☐

- < 6 mths ago 1
- 6-12 mths ago 2
- 1-5yrs ago 3
- > 5 yrs ago 4

How did that person die? Was it an ... ☐

- Accident 1
- homicide 2
- or suicide? 3

Was this before or after you joined the police? ☐

- Before 1
- After 2

9. Were you ever in a motor vehicle accident serious enough to cause injury to one or more passengers? ☐

- 1. NO (Go to the next question)
- 2. YES (Please continue)

Did this happen... ☐

- 1. Once
- 2. More than once

When did this happen? (If it happened more than once, please give the last time). ☐

- < 6 mths ago 1
- 6-12 mths ago 2
- 1-5yrs ago 3
- > 5 yrs ago 4

Was this before or after you joined the police? ☐

- Before 1
- After 2

Did this happen to you while you were on duty as a police officer? ☐

- Yes 1
- No 2

10. Have you been present at an incident in which a police officer was deliberately or accidentally killed?

1. NO (Go to the next question)
2. YES (Please continue)

Did this happen...

1. Once
2. More than once

When did this happen? (If it happened more than once, please give the last time).

< 6 mths ago	6-12 mths ago	1-5yrs ago	> 5 yrs ago
1	2	3	4

Was this before or after you joined the police?

Before	After
1	2

Did this happen to you while you were on duty as a police officer?

Yes	No
1	2

11. Have you been present at an incident in which a member of the public was killed or seriously injured by the police?

1. NO (Go to the next question)
2. YES (Please continue)

Did this happen...

1. Once
2. More than once

When did this happen? (If it happened more than once, please give the last time).

< 6 mths ago	6-12 mths ago	1-5yrs ago	> 5 yrs ago
1	2	3	4

Was this before or after you joined the police?

Before	After
1	2

Did this happen to you while you were on duty as a police officer?

Yes	No
1	2

IN CONFIDENCE

12. Have you been involved in work with victims of multiple or otherwise particularly disturbing homicides (e.g. child or aged victims)?

1. NO (Go to the next question)
2. YES (Please continue)

Did this happen...

1. Once
2. More than once

When did this happen? (If it happened more than once, please give the last time).

- < 6 mths ago16-12 mths ago21-5yrs ago3> 5 yrs ago4

Was this before or after you joined the police?

Before1After2

Did this happen to you while you were on duty as a police officer?

Yes1No2

13. Have you worked at accidents in which there are multiple victims or severe mutilation of bodies?

1. NO (Go to the next question)
2. YES (Please continue)

Did this happen...

1. Once
2. More than once

When did this happen? (If it happened more than once, please give the last time).

- < 6 mths ago16-12 mths ago21-5yrs ago3> 5 yrs ago4

Was this before or after you joined the police?

Before1After2

Did this happen to you while you were on duty as a police officer?

Yes1No2

14. Have you been involved in a Disaster Victim Identification Process?

1. NO (Go to the next question)
2. YES (Please continue)

Did this happen...

1. Once
2. More than once

When did this happen? (If it happened more than once, please give the last time).

< 6 mths ago	6-12 mths ago	1-5yrs ago	> 5 yrs ago
1	2	3	4

Was this before or after you joined the police?

Before	After
1	2

Did this happen to you while you were on duty as a police officer?

Yes	No
1	2

15. Have you ever worked for a period of time in a work area that constantly included work that was distressing for you (such as child abuse cases or multiple incidents of domestic violence)?

1. NO (Go to the next question)
2. YES (Please continue)

What was the work area?

Over what period of time did this happen?

< 6 mths	6-12 mths	1-5yrs	> 5 yrs
1	2	3	4

Was this before or after you joined the police?

Before	After
1	2

Did you work in this area as a police officer?

Yes	No
1	2

16. Did you ever have some other shocking or distressing experience, something that has not been mentioned yet?

☐
1. NO

2. YES (Please continue)

The experience was _____

- Did this happen...

☐
1. Once

2. More than once

- When did this happen? (If it happened more than once, please give the last time).

☐
- < 6 mths ago
1

6-12 mths ago
2

1-5yrs ago
3

> 5 yrs ago
4

- Was this before or after you joined the police?

☐
- Before
1

After
2

- Did this happen to you while you were on duty as a police officer?

☐
- Yes
1

No
2

- Of all the experiences to which you have answered "yes" in this last section, which one would you say has affected you the most since. Please indicate by writing the number of the question below. (e.g. the experience of loss by fire was no.5).

☐
- The experience that has affected me the most was mentioned in question no. _____

- Finally, when considering your fellow officers at your present station, how easy is it to talk with them about the details of your traumatic experiences?

☐
- 1 Not easy at all

2 It is easier for some experiences than for others

3 Very easy to talk about them

- How easy is it to talk to others at your present station about your feelings about your traumatic experiences?

☐
- 1 Not easy at all

2 Some feelings are easier to talk about than others

3 It is very easy to talk about my feelings

Appendix E

INFORMATION TO PARTICIPANTS FOLLOWING THE MAIN STUDY



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DEPARTMENT OF
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INITIAL RESULTS OF THE POLICE TRAUMA STUDY

A survey was carried out in 1994 to investigate the levels of posttraumatic stress disorder (PTSD) symptoms, the types of trauma experienced and the kinds of social support utilised by a sample of working police officers. One thousand questionnaires were distributed to officers in Region 3 and to some officers in Region 4. We received 527 usable returns (and one shredded) which was a very pleasing return rate given police officers' expressed dislike of paper work. Other reasons that we received for not filling in the questionnaire were a mistrust of the organisation or cynicism about the importance of trauma (especially in younger officers).

Returns

Among those returns, 380 were from constables, 130 from sergeants and senior sergeants and 14 from inspectors and superintendents. 468 respondents were male and 58 were female (11%, which is comparable to the percentage of women in NZ Police). The age range was from 21 to 62 years with a mean of 35, which is also a representative sample.

PTSD Symptoms

The mean score on the measure of PTSD symptoms was 78.98 which is only slightly higher than the mean score of a civilian population who had experienced a natural disaster (Cyclone Bola). Using these scores, 36 (7.5%) people were identified as suffering from the disorder. Again this is comparable to the same civilian population. Those with no educational qualifications had higher PTSD scores than those with school qualifications or higher. Both the traffic safety branch and the CIB showed higher mean levels of PTSD than the general duties branch.

Traumas

Traumas experienced since joining the police and while on duty as a police officer were more strongly related to PTSD symptoms than those experienced outside the police. The traumatic experiences that affected PTSD symptoms the most were robbery or mugging, disturbing homicides, disturbing accidents, the death of a friend in the police, assault or injury, chronic distress at work, and other experiences. Of these the traumas that contributed to PTSD symptoms on their own (i.e. without the additive affects of other experiences) were robbery and mugging, the death of a police friend, chronic distress at work and other experiences.

Two of these types of trauma need further explanation. First chronic distress is described as work in an area that was constantly distressing. The areas of chronic distress fell into several broad types: child and sexual abuse; CIB and undercover work; youth aid; photography, inquest work; deaths including constant sudden deaths, suicides, accidents; general duties policing including frontline work, one and two man stations and domestic violence; watchhouse; prison escort; dog handling.

Secondly, 'other experiences' were replies to a question asking for types of trauma experienced that had not already been mentioned in the questionnaire. Often the responses to this question involved experiences that had already been listed but were important to the respondent and deserved more detail. Other types of trauma that had not been mentioned were also obviously of a particularly memorable nature. Therefore it is not surprising that

this general category is also very important in relation to PTSD symptoms. The types of trauma that were listed here include:

- i. Those already mentioned but put down here as particularly salient e.g. family member died, particularly horrific accidents and homicides, or threats to life.
- ii. Personal tragedies apart from death.
- iii. Cot deaths (sometimes the same age as officer's child).
- iv. Suicides especially with shotguns.
- v. Witnessing death by homicide or accident.
- vi. Dealing with families of victims.
- vii. Shooting incidents.
- viii. Being held hostage.
- ix. Body recoveries.
- x. Threats from the public to self and family.
- xi. Crowds and riots.
- xii. Organisational stressors such as complaints, enquiries, staff disloyalties or ill-treatment by supervisors.

Social Support

Taking into account the effects of people's traumatic experiences, the types of social support that have the strongest effect on PTSD symptoms are:

1. Ease of talking about traumatic experiences at work. The more people found it easy to talk about both the details and their feelings about their experiences, the lower their PTSD symptom scores.
2. Social support from family and friends outside work. The more people felt that their family and/or friends were supportive, the lower their PTSD symptom scores.
3. Talking to fellow officers about positive things at work. The more positive talk at work the lower the PTSD scores.
4. Expressing feelings about trauma. The more people felt that their work place allowed discussion of feelings, the lower their PTSD scores.
5. Talking with fellow officers about traumatic experiences. The more people talk about their experiences at work the higher their PTSD scores. This one seems contradictory, but may have a lot to do with the kinds of ways that people actually do talk about upsetting experiences at work or how many of these sorts of experiences their work actually involves. Note that the relationships shown by these initial analyses are not necessarily causal in either direction. For example talking about positive things at work may help protect people from developing symptoms, but it is also very likely that people with PTSD symptoms see their work very negatively and therefore have fewer conversations about positive things.

If you have any comments to make about these results or wish to ask any questions about them please do not hesitate to ring me at Massey (06 350 4146). Thank you to all those who participated in the study by filling in the questionnaire, and for all the valuable feedback that I have already received by letter and by phone.

Christine Stephens
Psychology Department
Massey University.

Appendix F

SUMMARY OF TRAUMA AND OUTCOME VARIABLES

Table F1
Means, Standard Deviations, and Range for all Trauma Variables, PTSD and Physical Health Variables

	N	Mean	SD	Range
Number of Traumas	525	4.62	2.30	0-12
Number and Frequency	523	7.15	3.84	0-22
Lifetime Trauma	518	9.26	5.01	0-36
Trauma after joining Police	527	4.00	2.34	0-12
Trauma before joining Police	527	.58	.87	0-12
Trauma while on duty	527	2.59	1.70	0-12
Trauma while off duty	527	1.53	.99	0-12
Civilian Mississippi	508	78.99	15.77	45-161
PILL	527	23.83	18.44	0-149
Self Rated Health	525	5.31	1.30	1-7

Appendix G

SUMMARY OF SOCIAL SUPPORT VARIABLES

Table G1
Means, Standard Deviation and Range for all Social Support Variables.

	N	Mean	SD	Range
SS from Supervisor	518	3.28	1.00	1-5
SS from Peers	517	3.16	.75	1-5
SS from Family	521	4.09	.85	1-5
Peer Communication:				
About Disturbing Events	526	2.67	.70	1-5
Personal	525	3.12	.62	1-5
Negative	524	3.17	.68	1-5
Positive	525	2.96	.61	1-5
Supervisor Communication:				
About Disturbing Events	525	2.16	.73	1-5
Personal	525	2.35	.72	1-5
Negative	524	2.40	.71	1-5
Positive	524	2.65	.70	1-5
Attitudes Towards				
Expressing Emotion	506	4.90	1.46	0-8
Talking About Trauma	515	1.85	1.22	0-4