INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

**ProQuest Information and Learning
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
800-521-0600**

UMI[®]

Critical Incident Stress Management Training: Efficacy in an Urban Fire Service

Garry D. Spence

Carleton University

**in Partial Fulfillment of the Requirements for
the Degree of Master of Arts**

**National Library
of Canada**

**Acquisitions and
Bibliographic Services**

**395 Wellington Street
Ottawa ON K1A 0N4
Canada**

**Bibliothèque nationale
du Canada**

**Acquisitions et
services bibliographiques**

**395, rue Wellington
Ottawa ON K1A 0N4
Canada**

Your file Votre référence

Our file Notre référence

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-66857-6

Canada

The undersigned recommend to the
Faculty of Graduate Studies and Research
Acceptance of the thesis:

"Critical Incident Stress Management Training: Efficacy in an Urban Fire Service"

submitted by

Garry Spence

in Partial fulfillment of the requirements for

the degree of Master of Arts

Chair

Thesis Supervisor

Carleton University
June, 2001

Abstract

This study evaluated the efficacy of Critical Incident Stress Management (CISM) training delivered to an urban fire service. Two years after delivery, the firefighters (Trained) were compared to a cohort group of firefighters (Not trained) from two different fire services in the same geographical region. CISM training efficacy was determined by evaluating the firefighters on levels of stress symptoms and use of coping strategies. Contrary to the hypothesis, firefighters receiving the original training reported higher overall stress symptoms than the comparison group, as well as greater use of negative coping strategies. In addition, it was found that the Not Trained group had also received CISM training from other sources. Further investigation of stress-correlates showed a strong relationship between higher stress symptoms and use of coping strategies of all types. It is argued that the higher stress of the Trained group results from greater exposure to critical incidents, particularly those of a medical nature.

Acknowledgments

I would like to thank Dr. Jo Wood for her great patience and understanding, Dr. Roger Blockley for making possible an equitable outcome, and all those people associated with the psychology graduate program that have assisted me over the course of my graduate degree program. I would also like to thank my wife, Dr. Claire LeBlanc, for her continuous love and support, especially during the eighteen months we lived apart while she was working diligently to complete a fellowship program at the Hospital for Sick Kids in Toronto. Finally, I would be remiss if I did not mention the role played by my German Shepherd, Shera. Her unconditional friendship on our daily walks through the forest provided the needed impetus as I ruminated on how to tackle the next step in this demanding project.

Table of Contents

Critical Incident Stress Management Training: Efficacy in an Urban Fire Service	1
Post Traumatic Stress Disorder (PTSD) and Firefighters	2
The Nature of Psychological Stress in Firefighting	4
Stress Management in the Fire Service	5
Development of CISM	5
Critical Incident Stress Management (CISM)	6
CISM Terms	7
Symptoms of Critical Incident Stress	8
Dealing With Critical Incident Stress Reactions	8
The Ottawa Valley Critical Incident Stress Management Team (OVCISMT)	9
CISM Training in the Ottawa Fire Services	10
Stress Inoculation Training	11
CISM Training Program Development	12
Phase I: CISM Training	13
Phase II: General Stress Education Training	15
Review of Critical Incident Stress Research	15
CIS Debriefing - Positive Outcome/Uncontrolled Studies	16
CIS Debriefing - Positive Outcome/Comparison Groups	16
CIS Debriefing - Negative Outcome/Controlled Studies	17
Measuring the Effectiveness of CISM Training for the OFD	18
Research Design	19
Method	22
Participants	22
Procedure	23
Materials	24
Results	25
Homogeneity of the Trained and Not Trained Groups	26
Demographic Statistics	26
Work-Load Comparison	27
Comparison of Response Data Between Groups	28
Firefighter Estimates of Number of Responses	29
Pressure Management Indicator (PMI)	30
Comparison of Attendance at Critical Incident Stress Debriefings	30
Firefighter Estimates of Potential Critical Incidents	31
Effects of Previous Critical Incidents	31
Effects of Treatment	32
Firefighter Stress Levels - Impact of Events Scale-Revised (IES-R)	32
Type of Incident for IES-R	34
Firefighter Coping - Ways of Coping Checklist-Revised (WCC-R)	35

Effect of CISM Training Received by the Trained Group	36
Comparison of CISM Knowledge	37
Additional Factors Affecting Stress Levels and Coping Methods	38
Previous Critical Incidents	39
The Effect of Attendance at Critical Incident Stress Debriefings	39
The Effect of Previous Critical Incidents	40
Correlation of Age and Experience with IES-R and Coping	41
Discussion	42
Effect of CISM Training	43
Comparison of Stress Levels	45
Factors Affecting Stress Levels	45
Comparison of Coping Methods	47
General Implications of the Research Findings	49
General Limitations of Study	50
Recommendations for Further Research	51
References	53
Appendix	62
Participant Information - Firefighter Stress Study	62
Critical Incident Stress Questionnaire	63
Impact of Events Scale-Revised	68
Ways of Coping Checklist-Revised	70
Pressure Management Indicator	73

List of Tables

Table	Page
Table 1: Comparison of Emergency Response Data	30
Table 2: Comparison of Trained and Not Trained Means for PMI Subscales	31
Table 3: Firefighter Estimates of Number of Critical Incidents	32
Table 4: Comparison of Trained and Not trained Means for the IES-R	34
Table 5: Comparison of Trained and Not trained Means for the WCC-R	36
Table 6: Comparison of Number of Ways Trained	38
Table 7: Comparison of Trained and Not trained Means for CISM Knowledge	39
Table 8: Number of Previous Critical Incidents	40
Table 9 Effect of CIS Debriefing on Stress and Coping	40
Table 10: Effects of previous Critical Incidents on Coping	42
Table 11: Correlation Matrix for Age & Experience with the IES-R & WCC-R	42

List of Figures

Figure	Page
Figure 1: Relationship Status of Firefighters	28
Figure 2: Effect of Previous Incidents	32
Figure 3: Firefighters with High IES-R Score (> 24)	34
Figure 4: Reason For CISD (IES-R)	35
Figure 5: Effect of Previous Critical Incidents	41

Critical Incident Stress Management Training: Efficacy in an Urban Fire Service

Professional firefighting ranks high among those professions considered to be exceptionally dangerous and stressful (International Association of Firefighters [IAFF], 1993; Kranz, 1992). Firefighters respond to a variety of demanding emergency situations including fires, motor vehicle accidents, medical responses, explosions, hazardous materials spills and even large-scale disasters. In recent years, the traditional role of fighting fires has shifted to a broader, but more specialized nature. Mirroring a national trend in the USA, firefighters in Canada are currently experiencing a large increase in responses to specialized incidents such as medical emergencies, water rescue and hazardous materials spills (IAFF, 1993; Ottawa Fire Department, 1999).

Selye (1982) defines stress as the non-specific response of the body to any demand placed upon it. After a long career of professional firefighting, these demands can take their toll. Given the frequency, intensity, and variety of occupational stressors in firefighting, it is not surprising that the United States Fire Administration (USFA) reports that 49 % of the 112 firefighter fatalities in 1999 were due to stress or overexertion, with heart attacks being the leading cause of death (USFA, 2000). In 1999, the IAFF released a report indicating that firefighter injury rates were 32.4 per 100 firefighters, over 4.5 times that of private industry (IAFF, 1999). Despite the epidemiological data that appears to support a relationship between firefighters and the incidence of cardiovascular disease, little is known about the nature of their physiological and psychological stress symptoms.

Aside from the obvious physical perils of working as a firefighter under dangerous and unpredictable conditions, the potentially tragic nature of emergency incidents must also be taken into account. While there have been modern advances in personal protective

equipment to counteract the physiological stress of firefighting, such as fire retardant fabrics and self contained breathing apparatus, progress in addressing psychological stress has not kept pace. In fact, the quality of information and research on the psychological stress experienced by firefighters has been subject to extreme variation, resulting in a significant limitation in the understanding of its related phenomena and intervention strategies (Gist and Woodall, 1995).

This raises the question of whether firefighters differ from the general population in their incidence of stress-related disorders. Research in this area has presented conflicting results. Using the Minnesota Multiphasic Personality Inventory (MMPI), Bieliauskas (1980) reported that mean firefighter MMPI clinical profiles were within normal limits. A study of emergency service workers after a plane crash disaster indicated no clinically significant symptom levels although they were somewhat above a general population sample in symptoms endorsed (Redburn, 1992). In contrast, Corneil (1993) found statistically significant elevations on most of the scales of the Brief Symptom Inventory for a group of urban Canadian firefighters.

Post Traumatic Stress Disorder (PTSD) and Firefighters

According to DSM IV (American Psychological Association [APA], 1994), this is a disorder that develops in response to events that are threatening to life or bodily integrity, witnessing threatening or deadly events, and learning of violence to, or the unexpected or violent death of close associates. In the context of an emergency response, firefighters could potentially experience any one of these types of traumatic events. Symptoms associated with PTSD include: (a) re-experiencing the event in varying sensory forms (flashbacks), (b) avoiding reminders associated with the traumatic event, and (c),

chronic hyperarousal in the Autonomic Nervous System (ANS). Specific ANS symptoms can include: (a) accelerated heart rate, (b) cold sweating, (c) rapid breathing, and (d), hypervigilance. These symptoms can lead to sleep disturbances, changes in normal behavior, problems with concentration, and difficulties in personal and work relationships, which are further hallmarks of PTSD (Rothschild, 1998). Symptoms must last for more than a month for PTSD to be present.

For the purposes of this research study, a comprehensive discussion of PTSD is not indicated. This brief description of it's clinical presentation and symptoms will serve as a reference in regard to traumatic stress reactions in firefighters. Suffice it to say that of all people that are exposed to trauma, very few go on to develop PTSD (Kessler, Price & Wortman, 1985). In most cases, persisting symptoms gradually disappear over a relatively short span of time. Generally, firefighters fit into this category, but the nature of their profession certainly has the potential to expose them to greater numbers of traumatic events than the general population.

Early research on post traumatic stress disorder (PTSD) in the general population of the United States indicated a 1 % prevalence rate according to the findings of the Epidemiologic Catchment Area Survey (Helzer, Robins, & McEvoy, 1987). More recent studies, based on community surveys, show that PTSD has a lifetime prevalence of 7 % to 12 % (Breslau, 1991; Kilpatrick and Resnick, 1993). With respect to more specific groups that have been researched, Schlenger, Kulka, Fairbank, Hough, Jordan, Marmar, & Weiss (1992) found a prevalence rate of 15.2% PTSD in Vietnam veterans as opposed to a rate of 1.2 % for a sample from a population of non-veteran, same-generation males.

Studies of emergency service responders using the Impact of Events Scale (Horowitz, Wilner, & Alvarez, 1979), have shown a variety of prevalence rates. In a

sample of firefighter-paramedics, Beaton and Murphy (1993) found that 12.3% of the participants displayed symptoms indicative of PTSD. Corneil (1993), in an epidemiologic study of Canadian firefighters observed 16.2 % of subjects with symptoms indicating PTSD, and reported a relationship between these findings and exposure to traumatic events on the job. A more recent study comparing emergency service personnel exposure to traumatic events in the United States and Canada, reported sample rates of 22 % and 17 % respectively, of symptoms indicating PTSD (Corneil, Beaton, Murphy, Johnson, & Pike, 1999).

The Nature of Psychological Stress in Firefighting

Research supports the harmful effects of occupational stressors on the mental well-being of firefighters. In 1991, approximately 8 % of firefighter job disabilities were classified due to mental stress (IAFF, 1993). As a result of exposure to traumatic events at emergency incidents, the vast majority of firefighters will experience both acute and chronic secondary trauma symptoms during their career including intrusion, avoidance, hypervigilance, guilt, and disturbed sleep (Beaton & Murphy, 1993). A number of associated etiological variables have also been identified as risk factors for post-traumatic stress reactions (McFarlane & Yehuda, 1996; Murphy, 1991). These related variables can include the nature and extent of the traumatic exposures, as well as relevant occupational and non-work variables such as age, years of service, peer pressure and marital status (Corneil et al, 1999).

Extensive work by McFarlane (1988,1989) on the etiology of posttraumatic morbidity suggests that traumatic exposures, although moderately predictive of perceived distress, are not a strong indicator of long-lasting symptoms of trauma. Furthermore,

Cook and Bickman (1990) report that traumatic exposures in the emergency services are only a determinant of the intensity of the immediate stress but hold no predictive effect respecting long-term impacts.

The area of diagnostic research in PTSD still remains to be tapped. To some degree, elevated rates of post-trauma symptoms in firefighters have been reported (Beaton and Murphy, 1993; Corneil, 1993; Corneil et al, 1999), but the actual incidence of clinically diagnosed PTSD has not been adequately investigated or reported statistically.

Stress Management in the Fire Service

The purpose of this study was to examine stress management in the fire service. In particular, the focus of the research concerned the effectiveness of a specific stress management training program delivered to the Ottawa Fire Department by the author. The training program was developed from the ideas of Mitchell (1983), and based on the principles of Critical Incident Stress Management (CISM). An introduction to the components of CISM follows, after which the Ottawa Fire Department CISM training program will be described. A review of past research in the area of CISM will also be presented.

Development of CISM

In the 1980's, a body of research began to emerge in the emergency-services literature making reference to the negative psychological consequences of emergency rescue work. Increased speculation about the traumatization of emergency responders at incidents began to occur. Following the publication of the third revision of the Diagnostic and Statistical Manual ([DSM-III] APA, 1980), suggestions that fire and rescue personnel

could experience PTSD through “secondary victimization” began to emerge (Gist & Woodall, 1995).

As “crisis workers,” firefighters are at risk to what Figley (1995) has termed secondary traumatic stress, or what Mitchell (1983) calls Critical Incident Stress (CIS), the stress associated with helping, or wanting to help a victim of trauma. Exposure to duty-related trauma is repetitive and potentially cumulative, and can involve overwhelming contact with severely injured, mutilated, or dead and dying victims (Beaton, Murphy, Pike, & Jarrett, 1995). In the context of other job-related demands, there is mounting evidence to support a cumulative toll of stressful emergency responses, including an increased prevalence of post-trauma stress symptomatology (Beaton & Murphy, 1993).

An intervention strategy developed by Mitchell (1983) was the main focus of research on traumatic stress in firefighters. The method of intervention and prevention for those exposed to a traumatic event was called “debriefing” (Dunning, 1988; Mitchell, 1983; Raphael, 1986). The term was borrowed from an earlier military and paramilitary (i.e., Army, Police, Fire) process involving a post-incident review, or operational critique of an incident. The procedure often elicited personal affective and cognitive responses to the experience (Wollman, 1993). The value of this cathartic component eventually led to the evolution of Critical Incident Stress Debriefing (Mitchell, 1983), a technique that has gained ground as an intervention strategy for firefighters involved in traumatic incidents.

Critical Incident Stress Management (CISM)

CISM is an alternative strategy for dealing with traumatic stress that is based on a peer-support network of emergency service workers and mental health professionals working in a pro bono capacity (see Linton, 1995). The network provides a

multidimensional service for traumatic stress management including educational components and selective group, or individual interventions. The educational components help to increase awareness about stress reactions, and how to recognize and deal with them. Traditionally, these training sessions are reactive and take place during debriefing interventions, but can be scheduled as separate events depending on the resources available to fire departments and the CISM teams operating in the area. Sometimes the preventive aspect of CISM training is limited when departments are too large for volunteer CISM teams to provide larger-scale training sessions (Mitchell & Bray, 1990).

When necessary, CISM serves to identify and extend help to those individuals who have become overwhelmed by a traumatic event (Mitchell et al, 1990). Fire Departments contact the CISM team in their area and arrange for the provision of group debriefings, or individual counseling sessions (Ottawa Fire Department Standard Operating Guideline, 1998). Firefighters requiring further help may be referred to mental health professionals through their department (e.g., Employee assistance Program).

CISM Terms

CISM is often discussed using several proprietary terms and acronyms that are key to the understanding of the program components. The definitions that follow will serve as a reference source during further discussion of the concepts:

1. **Critical Incident** - a traumatic or life-threatening event that may overwhelm a firefighter's usual coping mechanisms. In the context of the fire service, a critical incident may be one of the following: (a) the serious injury or death of a firefighter in the line of duty, (b) the serious injury or death of a civilian, (c) the serious injury or death of a child,

(d) the loss of life following a prolonged rescue attempt, or (e), any incident that can be considered a serious physical or psychological threat to firefighters;

2. Critical Incident Stress (CIS) - a normal stress reaction to a powerful negative event that overwhelms a person's ability to cope;

3. Critical Incident Stress Debriefing (CISD) - a psychological, emotional, and educational process to mitigate the impact of a critical incident on the firefighters involved;

4. Peer Support - the process by which one firefighter helps another to deal with stress or related problems;

5. OVCISMT - the Ottawa Valley Critical Incident Stress Management Team, a volunteer organization that provides intervention services for the members of the Ottawa Fire Department and other area emergency services.

Symptoms of Critical Incident Stress

Like the primary victims of traumatic events, firefighters are also at risk of developing posttraumatic stress symptoms (Raphael, Singh, & Bradbury, 1980). As such, they can develop any of the symptoms associated with PTSD (physiological, cognitive, emotional, or behavioral), but they typically resolve in a short period of time. As reported previously, recurring flashbacks of the experience, avoidance of similar situations, and guilt about perceived performance at the incident are common (Mitchell, 1983).

Dealing With Critical Incident Stress Reactions

There are many ways to deal with traumatic stress reactions including vigorous exercise, deep muscle relaxation, talking to a trusted friend, or arranging for consultation with a Mental Health Professional. The latter strategy may be initiated through a referral

from a family doctor, a member of the clergy, or through an employee assistance program. Unfortunately, despite the availability of professional help, individuals are often left to deal with traumatic stress on their own, whether by choice or circumstance (Beaton, Murphy, Pike, & Jarrett, 1995).

There are many barriers that prevent firefighters from seeking help on their own. They may feel that other firefighters are not experiencing a Critical Incident Stress reaction like themselves and are compelled to deal with it on their own. They may also feel that the powerful emotions they are experiencing are indications of weakness or mental illness (Shelton and Kelly, 1995). Peer pressure to be impervious to incident-related stress may drive some firefighters to ignore their symptoms until they suffer more serious stress reactions, or even leave the profession entirely (IAFF, 1999).

The Ottawa Valley Critical Incident Stress Management Team (OVCISMT)

A growing awareness about emergency service stress and the increasing popularity surrounding the concept of CISM, led to the formation of many Critical Incident Stress Management and Trauma Response teams (Mitchell, 1988). In the region of Ottawa-Carleton, a regional CISM team exists, composed of peer volunteers and mental health professionals from the community. The team responds to provide support on an as-needed basis when critical incidents occur.

In 1991, the author of this thesis became the team coordinator for the OVCISMT with the responsibilities of liaising with emergency service groups, arranging for interventions and the delivery of training in CISM when requested. Preventive training was primarily limited to sessions that could be delivered to smaller fire departments in rural areas. Being a volunteer organization, the OVCISMT did not have the resources to

provide large-scale training to major fire departments. After five years as Team Coordinator, the author resigned to concentrate on developing a preventive CISM training program for the Ottawa Fire Department.

CISM Training in the Ottawa Fire Services

As with many stress management regimens, awareness and education are key concepts to understanding stress, and essential for learning how to cope when stress starts to become unmanageable, especially in professions such as firefighting (Moos, 1986). In an effort to reach greater numbers of firefighters about traumatic stress, a Critical Incident Stress Management (CISM) program was developed by the author for delivery to the members of the Ottawa Fire Department (OFD) in 1997. The primary aim of this training was to have firefighters develop an awareness of stress and how to deal with it prior to experiencing an event such as a Critical Incident. The author sought to develop a stress management program based on the CISM principles of Mitchell (1988) with particular emphasis on the preventive and educational components, as opposed to concentrating on the provision of reactive intervention services.

Previously, firefighters participating in debriefings after a Critical Incident would be presented with a comprehensive, but condensed tutorial in Critical Incident Stress awareness, positive coping strategies, and how to recognize and deal with Critical Incident Stress at incidents. The problem with this scenario, is that preparing firefighters for stress reactions after the fact may not be as effective as inoculating them against stress by delivering this material to them before they have to experience a Critical Incident (Epstein, 1983).

Stress Inoculation Training

Inoculating oneself against stress is an analogy that has been made with reference to the resistance developed when a person is vaccinated against a disease. Stress inoculation training (SIT) provides individuals with defenses, or sets of skills enabling them to deal with stressful situations (Meichenbaum & Cameron, 1983). It is delivered in three phases: (a) the development of an understanding of the nature of an individual's stress response, (b) teaching of specific coping skills or ensuring that appropriate coping skills are used, and (c), rehearsal or practice of those skills through role playing and real-life scenarios (Wertkin, 1985).

The goals of SIT are to normalize the stress reaction, to learn how to break down stressful events into manageable doses, to ensure adequate coping skills are present, and to experiment with and practice coping skills systematically (Meichenbaum, 1994). Stress Inoculation may be described as developing psychological toughness. People that are in very demanding and responsible positions, such as firefighters, can develop healthy reactions to stress, providing they are in control and have an opportunity to cope (Dienstbier, 1989). Skills training can provide that control, and reduce the chances of developing unhealthy reactions, including the feeling of learned helplessness (Maddi & Kobasa, 1984).

SIT has been used extensively with individuals as cognitive restructuring therapy, as well in larger groups as a preventative strategy (Admi, 1997; Kendall, 1983; Novaco, 1977). Many researchers have suggested training programs resembling SIT (Flin, 1996; Paton, 1996; Shalev, 1996) but there are no reported studies involving firefighters or emergency service personnel currently in the literature.

In the case of firefighters, skills that might be included in a preventative stress training program are: (a) emotional self-regulation, (b) interpersonal communication skills, (c) attention diversion procedures, and (d), using social support systems (Meichenbaum, 1996). In particular, these skills must be specifically geared towards the types of stressors the firefighters are exposed to and include methods of coping that are practical and appropriate for firefighters to use.

CISM Training Program Development

By combining the principles of SIT with the components of CISM, a stress training program was developed that would be deliverable to all members of the OFD. Because of the regular training that firefighters must complete to maintain technological skill sets in firefighting, emergency medical care, and specialized rescue techniques, it was important that a psychological training session be geared in such a manner as to be appealing to firefighters without being overly theoretical. In addition, the opportunity for individual instruction was unrealistic given the large number of firefighters, so the program had to be tailored to reach group sizes in the order of five to ten people or more. Class participation would be encouraged, with individuals being asked to contribute to discussions by relating their own personal experiences with Critical Incidents during their careers. Visual and practical elements were also incorporated to vary the delivery of the program. In addition to being delivered to the firefighters on duty, this program was also slated for delivery to all new recruits that were hired. It would be presented during their twelve week training prior to entering the fire station as a probationary firefighter.

An opportunity to tie together several wellness initiatives came together at the time this program was being developed. A collaborative effort with the Heart Institute of the University of Ottawa: Civic Campus was used to develop a series of seminars which

covered topics such as: (a) cardiovascular disease prevention, (b) general stress awareness, (b) back injury prevention, and (d), nutrition. The module on general stress has been described here to indicate the components of stress management that were included in conjunction with the CISM training.

Phase I: CISM Training

The main focus of a CISM program specific to the members of the OFD, was to make information available about the stress associated with emergency response, increase member awareness about their own levels of stress as well as their peers, and to offer constructive ways to cope with stress reactions. Firefighters were presented the following major components:

1. Introduction to Stress in the Emergency Services, including history and development of the concept of Critical Incident Stress;
2. Critical Incident Stress, including definition, examples (video), symptoms, outcomes, dealing with Critical Incident Stress, and peer support;
3. CISM, including information about interventions, local support from the debriefing team (OVCISMT), and coping strategies;
4. Departmental guidelines, including procedures for initiating interventions, and support mechanisms such as Employee Assistance Program.
5. Review, including general discussion, and videotape reviewing the principles of CISM.

Designed to be delivered in the workplace during one session, the program usually lasted for approximately one half day depending on class size, location, and the degree of participation. The lecture was short enough to maintain the interest of the firefighters and

accommodated the reality that firefighters would have to respond to emergencies at any time during the training period. Even on busy days with several interruptions (i.e., emergency responses), the program could be delivered over the course of one day shift. Should a fire crew respond to a traumatic incident during the course of the training, its impact would have the potential to reinforce the material being delivered in the Critical Incident Stress awareness session.

Eight instructors (paratrainers) were selected to deliver the seminar to the members of the four platoons of the Ottawa Fire Department during the period from February 1997 to April 1997. The paratrainers were chosen based upon their own desire to participate in the program, their capabilities as instructors from previous departmental training, as well as evaluations by senior officers that indicated they were well-respected by their peers. In addition, they had to agree that they would assume the responsibility of being approached by their peers regarding issues of a personal and confidential nature as a result of delivering the program.

Each paratrainer was provided with a training package to deliver the program including a detailed training plan, two videotapes (examples of critical incidents and a CISM program review tape), and sufficient handout books prepared specifically for the course. Each participant in the training would receive this book for future reference.

Upon receiving the train-the-trainer course, the paratrainers were instructed to arrange the training sessions through the senior officer on their shift. Due to concurrent training taking place, it took approximately three months to complete the training process for the entire department. Several extra sessions were scheduled to accommodate

members that were sick, or on holidays during the original sessions. Training was completed by the spring of 1997.

Phase II: General Stress Education Training

The second training session was developed in conjunction with the University of Ottawa Heart Institute. A training session on general stress was developed by a member of the Heart Institute staff and delivered by the same paratrainers. The session consisted of information on the physiological basis of stress, stress management techniques (breathing exercises, progressive muscle relaxation, and goal setting strategies), and also involved the presentation of a video with testimony from department members encouraging others to seek support for stress symptoms that become overwhelming. This training was instituted in a manner similar to phase I and was completed in late 1998.

Comments solicited on an informal basis from the instructors about how both phases of training sessions was received were positive. In general, they indicated that the members felt that the information delivered was helpful and that it generated some good group discussion about critical incident stress during the majority of training sessions. Some paratrainers also mentioned that several members approached them privately at a later time to talk about some matters that were of a more personal nature concerning stress.

Review of Critical Incident Stress Research

Research about the effects of firefighter stress has been discussed earlier from the perspective of symptoms and the results of exposures to stressful events. It is important to state here that the majority of specific research into CISM has been focused on debriefing. Very little research can be found in the literature that examines the efficacy of preventive stress management training programs in the emergency services. As such, the intention of

presenting this review of intervention research serves primarily to illustrate research methods used to address the effectiveness of CISM. Because traumatic events lead to an immediate focus on assisting those involved rather than scientific enquiry, most of the research in this area has involved uncontrolled or quasi-experimental designs, typically after-only, before-after or nonequivalent control group designs (Everly et al., 2000).

CIS Debriefing - Positive Outcome/Uncontrolled Studies

Several uncontrolled studies have produced positive indications for debriefing. Robinson and Mitchell (1993) evaluated emergency service workers retrospectively that had participated in Mitchell (1983) model debriefings over a 21- month period and found that 96 percent reported experiencing a reduction in symptoms. In another uncontrolled study, Hokanson (1997) evaluated the Critical Incident Stress management program of the Los Angeles County Fire Department by means of a survey with over 600 respondents who had taken part in debriefings. The results of the survey indicated that more than half of the respondents reported a reduction in symptoms within 72 hours of an intervention following a critical incident.

Although these studies provide some evidence for the effectiveness of debriefing interventions, their results are inconclusive. In the case of Robinson and Mitchell (1993), the study used respondents from several different and distinct debriefings which further complicates data analysis. Most notable is the fact that comparison groups were not included in these studies and that traumatic stress symptoms are known to improve without treatment over time (Gist and Woodall, 1995).

CIS Debriefing - Positive Outcome/Comparison Groups

Other studies using comparisons between debriefed and non-debriefed populations have provided similar positive results. Bohl (1991) investigated the effectiveness of

debriefing on police officers involved in critical incidents with officers that received debriefing reporting less anger, depression, and fewer PTSD symptoms in follow up when compared with officers not receiving debriefing. Subjects for the study were self-selected by virtue of participation in the debriefing process and members of the control group did include those officers who declined attendance at debriefings.

In Los Angeles, debriefed emergency service workers threatened during a civil disturbance, indicated fewer symptoms when compared with those workers refusing debriefing (Wee, Mills & Koehler, 1993). Jenkins (1996) assessed debriefing procedures in a group of emergency service workers that responded to a mass shooting in a cafeteria in Texas. He reported fewer symptoms of anxiety and depression in the subjects that were debriefed than members that were not debriefed.

The use of comparison groups and performing subject assessment soon after the critical incident occurrence, increased the validity of these studies somewhat (Bohl, 1991; Jenkins, 1996; Wee et al., 1993). However, control was still limited by the selection bias of subjects self-selecting whether or not to be debriefed, and the use of a post-test only design.

CIS Debriefing - Negative Outcome/Controlled Studies

Not all studies have found positive outcomes for the effects of debriefing. Griffiths and Watts (1992) reported negative findings in the aftermath of two bus crashes in Australia. Of the 288 emergency service workers from several different organizations that were studied, 182 received debriefing following the incidents according to their department policy. In a one year follow-up, those workers that were debriefed, had significantly higher scores on the impact of events scale (Horowitz et al, 1979) and poorer scores for general health when compared to the 106 workers that were not debriefed.

Kenardy, Webster, Levin, Carr, Hazell, and Carter (1996) studied 195 disaster recovery workers one year after an earthquake in Australia. Attendance at debriefings was established by workers self-selecting whether to attend or not. The 62 workers who were debriefed showed no evidence of improved recovery rates, when compared to the 133 workers not debriefed. In follow-up two years later, similar negative results were obtained for the group that was debriefed.

While the validity of negative outcomes must be considered, these and other similar studies may have discrepancies. Some studies have used populations that may not have been homogeneous with data combined from various subject groups that have been lumped together into one sample (Griffiths & Watts, 1992; McFarlane, 1988). Others have indicated that there was some inconsistency in debriefing methods contributing to the lack of positive outcomes (Hobbs, Mayou, Harrison & Worlock, 1996). In particular, it is not known whether the debriefings in these studies actually followed the principles of Mitchell (1983), or were just referred to as debriefings for lack of a better description. Finally, the fact that assessment was done in follow-up two years later in Kenardy et al. (1996), may have not been a true indicator of mental health. There is a strong likelihood that during the two-year period following initial assessment, emergency service workers would have been involved in other traumatic events that could have affected their mental well being.

Measuring the Effectiveness of CISM Training for the OFD

Of all the research discovered relating to Critical Incident Stress, only two studies were found to have any connection to the evaluation of a CISM program. Even so, preventive training was not evaluated, and both researchers elected to determine program effectiveness through an analysis of the attitudes of personnel with regards to the quality

of interventions performed (Hokanson, 1997; Western Management Consultants, 1996). This approach is not indicated for the present research as the efficacy of a specific CISM training program is being evaluated, apart from intervention services which are provided through an alternate organization (OVCISMT).

While interventions are an important component of the overall CISM process, effective pre-incident CISM training may also have a potential effect on lowering stress levels. It follows that measuring such things as levels of firefighter stress may indicate that training has been effective in reducing stress. Other measureables can include assessment of firefighter coping methods, and testing for knowledge of CISM concepts and practices.

These alternative methods form the basis for determining the effectiveness of the CISM training program for the OFD. The following predictions comprise the main hypotheses of the present research:

1. It is expected that OFD firefighters, having received the CISM training program, will report fewer symptoms of traumatic stress and report the use of more positive coping methods to deal with traumatic stress when compared with a similar group of firefighters not receiving the CISM training;

2. It is expected that the OFD firefighters will have a better knowledge of CISM concepts and practices than the comparison group of firefighters not receiving the CISM training.

Research Design

After the OFD CISM training was delivered to the firefighters, several empirical methods of measuring the effectiveness of the OFD CISM training program were considered, and the basis of that investigation subsequently evolved into this thesis

research. A research methodology was mapped out to study the potential effects of the CISM training program by measuring certain components of stress and coping via standardized instruments, as well as a questionnaire designed to test the knowledge of the participants regarding CISM.

Many factors came into play before a final research design could be implemented. Ideally, a logical research strategy would have been to assign participants to treatment and control groups randomly, based upon whether or not they were to receive the CISM training. Logistically this was not a practical choice however. The reality was, that the majority of all Ottawa firefighters had already received the CISM training. This meant that a quasi-experimental design was required, specifically due to the lack of random assignment in subject selection.

The second factor concerned the selection of the firefighters that would make up the control group. Obtaining an acceptable number of participants would necessitate finding a comparable group of firefighters that had not received the CISM training and yet be similar in composition to the Ottawa Fire Department. Firefighters from other neighboring departments that did not receive the CISM training program were the logical choice.

The next factor concerned the lack of a pretest for the participants. Despite the fact that the treatment group, and the control group were both comprised of professional firefighters, it was necessary to provide some kind of empirical measurement that indicated the members of each group were fairly homogeneous. It was decided that:

1. an instrument designed to measure occupational stress in general would be used to determine if these two samples were similar. All workplaces have varying degrees of occupational stress (non-emergency in this case). If these two groups of firefighters are

indeed similar, the results of the occupational stress questionnaire should support this assertion;

2. descriptive statistics for each group would be gathered regarding the number of emergency responses for a six month period previous to the study, as well as the distribution of types of responses within those numbers (i.e., medical, fire and other responses).

To measure occupational stress, the Pressure Management Indicator (PMI) authored by Williams and Cooper (1998) was chosen. It is a standardized instrument used to measure occupational stress in the workplace that is easy to administer. The fact that the word 'stress' is avoided in the title serves to downplay this overused term.

The final factor in completing the design of the study involved the selection and development of the remaining instruments to be used. One would be used to measure the degree of reported trauma symptoms experienced by the participants, one would measure the different coping methods reported, and the last one would measure knowledge of the CISM training program (treatment).

For the first instrument, the Impact of Events Scale-Revised (IES-R) was chosen (Weiss & Marmar, 1997). It is a relatively short scale that is used extensively in research on traumatic stress and is based on the original Impact of Events Scale (Horowitz et al, 1979). Subjects report on their degree of symptoms experienced as the result of a recent traumatic experience. Symptoms are subdivided into the categories of: (a) intrusive, (b) avoidance, or (c), hyperarousal.

Secondly, the Ways of Coping Checklist- Revised (Vitaliano, Russo, Carr, Maiuro, & Becker, 1985) is based on the original Ways of Coping Checklist (Lazarus & Folkman, 1984). Subjects report on their ways of coping with respect to a recent stressful situation

they have encountered. Among these ways are methods that are problem-focused (actively deal with the stress) or ways that deny and avoid coping with it.

Finally, a questionnaire was developed by the author to gather demographic information about the participants, as well as to test for knowledge of the CISM training that was delivered to the treatment group. Questions were also included about participation in debriefings and potential Critical Incidents experienced at work.

In review, a quasi-experimental design was chosen, as participants were not selected randomly. Participants for the treatment group (Trained) were selected from the Ottawa Fire Department. Participants for the control group (Not Trained) were selected from two other regional fire departments, the Gloucester and Nepean Fire Departments. In the absence of a pretest, intergroup variability was measured using a comparison of subscales of the Pressure Management Indicator. Reported levels of trauma symptoms and coping methods were measured using the Impact of Events Scale-Revised and the Ways of Coping Checklist-Revised respectively. Knowledge of the CISM training program was measured using a questionnaire developed for the purposes of this study. It was expected that the treatment group would self-report less trauma symptoms than the control group, taking into consideration the workload and nature of emergency responses for each group, as well as reporting the use of more positive coping methods to reduce stress. In addition it was expected the treatment group would score better on CISM knowledge questions.

Method

Participants

All firefighters in the study worked for presently defunct fire departments in the Region Municipality of Ottawa-Carleton. Prior to the completion of this research, the City of Ottawa underwent an amalgamation process which necessitated the amalgamation of all

regional fire departments into one department, Ottawa Fire Services. Please note, that for the purposes of this study, Fire Departments are referred to by pre-amalgamation names.

All participants in the research were full-time professional fire fighters and are members of three different fire departments: (a) Ottawa Fire Department, (b) Nepean Fire Department, and (c) Gloucester Fire Department. One hundred and seventeen firefighters from Ottawa participated as well as 28 firefighters from Nepean and 28 firefighters from Gloucester, for a total of 173 subjects. In each case, the number of firefighters tested from each department were proportionate in that they comprised approximately 25 % of each Fire department's total firefighting personnel. Looking for a medium effect size with a power analysis of .80, it was estimated that 150 subjects would be needed in total. This proposed amount was exceeded by 23 participants.

Procedure

Previous to the testing phase, data concerning the number and nature of fire calls for each group (treatment and control) were tabulated from statistics obtained from the respective fire departments. Due to different statistical reporting methods used by each department, all response data were categorized into medical responses, and fire and other responses.

Each participant completed all instruments independently in a controlled group setting with no more than ten people in a group (reflecting the average number of firefighters in any given fire station). All tests were conducted while the participants were on duty. Testing sessions took approximately one hour to complete barring any interruptions (i.e., emergency responses).

The purpose of the testing was explained to each group before starting. It was also explained that each participant would receive feedback regarding the tests completed, as well as the opportunity to attend future information and training sessions in CISM should they so choose. Any firefighters declining to participate, would be excused to do other duties.

Materials

Each participant was handed a test package that contained the following (see Appendix A):

1. The Critical Incident Stress Questionnaire (CISQ) - used to collect demographic information as well as: (a) twelve questions about knowledge of CISM (b) three questions about participants estimates of responses they attended during the last six months and (c) six questions regarding critical incidents and debriefings;

2. Impact of Events Scale-Revised (IES-R) - a 22 item scale that measures the degree of stress symptoms in three categories: (a) intrusive symptoms, such as nightmares, intrusive thoughts or images, (b) avoidance symptoms, comprising attempts to ameliorate or avoid experiences associated with the traumatic event, and (c), hyperarousal symptoms, including difficulties sleeping, and problems concentrating. The IES-R has a high internal consistency of 0.83 for its three subscales using Cronbach's alpha. Mean test-retest correlation coefficients for the subscales were: (a) intrusion = .76, (b) avoidance = .70, and (c), hyperarousal = .76;

3. Ways of Coping Checklist-Revised (WCC-R) - a 42 item scale further divided into 5 subscales: (a) problem-focused, choosing and implementing a plan of action (b) avoidance, denial or avoidance of associations with traumatic event, (c) wishful-thinking,

hope of changing what happened, (d) blamed self, felt responsible for outcome, and (e) seeks social support, sought out their support systems as a coping strategy. Mean Internal consistency coefficients for the WCC-R are 0.82 (Cronbach's alpha);

4. The Pressure Management Indicator (PMI) - 22 items comprising 6 subscales of the PMI: (a) job satisfaction, (b) organization satisfaction, (c) workload, (d) relationships, (e) organization climate, and (f), daily hassles. The PMI tested with an average reliability of 0.77 (Cronbach's alpha).

Results

Data were analyzed with the treatment group, Ottawa Fire Department (OFD), being compared to the control group data from the Gloucester (GFD) and Nepean Fire Departments (NFD). The GFD and NFD were combined into one group of data with the acronym GNFD. For the purposes of this study, the OFD will be referred to as the Trained group, and the combined GNFD group will be referred to as the Not Trained group. The Trained group consisted of 117 professional firefighters that work in the 14 fire stations of pre-amalgamation Ottawa. They received training in the form of a Critical Incident Stress Management (CISM) Program that was delivered to them in early 1997. There were 56 professional firefighters in the Not Trained group, with 28 members from pre-amalgamation GFD, and 28 members from pre-amalgamation NFD. The Not Trained firefighters did not receive the same CISM training as the Trained group.

During testing sessions, some firefighters indicated that they could not complete parts of the questionnaires because they had not experienced a critical incident while on duty in the previous six months. They were advised to leave that section blank. Other respondents did not completely finish parts of the questionnaires. For the purposes of data

entry, all returned questionnaires were coded to ensure that uncompleted sections were not used in the data analysis.

For the Impact of Events Scale-Revised (IES-R), a total of 17 (14.5%) Trained firefighters and seven (12.5%) Not Trained firefighters did not complete it. With respect to the Ways of Coping Checklist-Revised (WCC-R), 19 (16.2%) Trained firefighters left it blank and six (10.7%) Not Trained firefighters did not complete it. Finally, five (4.3%) Trained firefighters did not complete all of the Pressure Management Indicator (PMI) subscales, as well as one (1.8%) Not Trained firefighter. Consequently, there will be some variation in sample size depending on the analysis. All analysis was done at a 95% confidence level ($p < .05$).

Homogeneity of the Trained and Not Trained Groups

The internal validity of this study relies on the assumption that the Trained and Not Trained firefighters are from similar populations. However, the fact that they are from a select employment group all working in the same geographic region does not necessarily guarantee a high degree of homogeneity. The nonequivalent group design of the study requires that the two groups be examined for relevant differences in demographic and other work-related variables.

Demographic Statistics

The Trained firefighters ranged in age from 24 to 54 years ($M = 40.88$, $SD = 6.81$), and the Not Trained group ranged from 26 to 57 years ($M = 40.66$, $SD = 7.99$). These means were not significantly different, $t(171) = 0.19$, $p = .85$. In terms of experience on the job, the Trained group ranged from one to 33 years ($M = 15.80$, $SD =$

8.44), and the Not Trained group ranged from 1.5 to 34 years ($M = 15.27$, $SD = 9.26$).

These means were not significantly different, $t(171) = 0.38$, $p = .71$.

There is a well-defined rank structure in these fire departments, but for the purposes of this research only two categories were used, firefighter and officer. There were 94 Trained firefighters (80.3%), and 23 officers (19.7%) in the sample. Respondents for the Not Trained group were represented by 48 firefighters (85.7%), and eight officers (14.3%). A Chi Square test of independence was not significant, $\chi^2(1, N = 173) = 0.74$, $p = .39$, since the proportion of officers in each group was very similar. Further analysis with respect to rank was not performed due to the small numbers available for comparison.

Other demographic data collected included relationship status and gender measures. The majority of firefighters for the Trained group reported that they were married (70.1 %), as was the case for the Not Trained firefighters (69.6 %). Percentages for the other categories were small but proportionately similar (see figure 1). A Chi Square test of independence was not significant, $\chi^2(5, N = 173) = 1.57$, $p = .91$. With respect to gender, there were only two female firefighters out of a total of 173 that were tested, both working for the Trained group. Due to these small numbers, analysis was not performed to look for gender differences. Exploration of the data did not indicate that these two cases were outliers, so their scores were not excluded from analysis.

Work-Load Comparison

Analysis of demographic variables such as age, experience, rank, and relationship status showed that there were no statistically significant differences between the Trained

Figure 1.

and Not Trained groups. Work-specific differences between the groups will now be examined including: (a) comparison of emergency response levels, (b) non-emergency occupational stress levels, (c) attendance at Critical Incident Stress Debriefings, (d) firefighter estimates of potential Critical Incidents, and (e) effects of previous Critical Incidents.

Comparison of Response Data Between Groups

Table 1 shows the emergency responses for the Trained and Not Trained groups during the six month period beginning January 1, 2000 to June 30, 2000. Responses have been broken down into two categories: (a) medical, and (b) fire and other responses. Data for the Trained group represents the mean responses of the 14 stations of the Ottawa Fire Department with a mean of 8.4 firefighters per station. Response data for the Not Trained

group represents the means for six of the eight fire stations in Gloucester and Nepean with a mean of 9.3 firefighters per station. Firefighters per station mean differences were not significant, $t(18) = -0.46$, $p = .65$.

The mean responses per station for the Trained group were not significantly different when compared to those of the Not Trained group, $t(18) = 1.10$, $p = .29$. When compared by medical responses, the station means for the Trained and Not Trained groups was just outside the significant probability level, $t(18) = 1.88$, $p = .08$. For fire and other responses, the Trained group station mean was not significantly different than the mean for the Not Trained group, $t(18) = 0.18$, $p = .86$.

Table 1

Comparison of Emergency Response Data

Group	n	Stations	Medical			Fire and Other		
			M	SD	% total	M	SD	% total
Trained	117	14	417	260	55.9	329	221	44.1
Not Trained	56	6	211	86	40.5	311	218	59.5

Firefighter Estimates of Number of Responses

In addition to data obtained about actual response levels, firefighters were asked to estimate the number of incidents they responded to during a typical shift. OFD firefighters estimated a higher number of responses per shift ($\underline{M} = 2.91$, $\underline{SD} = 1.16$) than the Not Trained group ($\underline{M} = 2.11$, $\underline{SD} = 0.76$), which was significantly different, $t(152.2) = 4.68$, $p = .000$.

Pressure Management Indicator (PMI)

Six subscales of the Pressure Management Indicator (PMI) were used to compare the firefighters with respect to work stress unrelated to emergencies. The subscales were (a) Job Satisfaction, (b) Organization Satisfaction, (c) Workload, (d) Job Relationships, (e) Organization Climate, and (f), Daily Hassles. There were no significant differences in the mean scores between the Trained and Not trained groups for all but one of the subscales. The Not Trained group scored significantly higher for the Organization satisfaction subscale (see table 2).

Table 2

Comparison of Trained and Not Trained Means for PMI Subscales

PMI Subscales	Trained		Not Trained		t-test		
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>t</u>	<u>df</u>	<u>p</u>
Job Satisfaction	23.9	7.63	26	5.21	-1.78	167	.08
Organization Satisfaction	18.7	5.46	20.7	5.33	-2.25	167	.03
Workload	14.9	4.88	14.3	5.61	0.76	167	.45
Job Relationships	24.5	8.44	23.2	6.72	0.99	167	.32
Organization Climate	13.2	4.77	12.4	4.08	1.18	124	.24
Daily Hassles	10.5	3.7	12.3	3.70	-1.21	167	.23

Note. $n = 112$ for the Trained group, and $n = 55$ for the Not Trained group.

Comparison of Attendance at Critical Incident Stress Debriefings

Of the 117 firefighters in the Trained group, 36 (30.8%) reported that they had attended a Critical Incident Stress Debriefing and of the 56 Not Trained firefighters, 22 (39.3%) reported going to a Critical Incident Stress Debriefing. A Chi Square test of independence was not significant, $\chi^2(1, N = 173) = 1.23, p = .27$. This indicated that the

proportion of firefighters attending debriefings was not significantly different between groups.

Firefighter Estimates of Potential Critical Incidents

When firefighters were asked to estimate the number of potential critical incidents their crew had experienced in the last six months, the Trained firefighters reported a proportionately higher number of events when compared to the Not Trained firefighters (see table 3). A Chi Square test of independence was significant, $\chi^2(3, N = 115) = 5.26, p = .02$.

Table 3

Firefighter Estimates of Number of Potential Critical Incidents

Potential Critical Incidents	OFD		GNFD		Total	
	<u>n</u>	% of group	<u>n</u>	% of group	<u>n</u>	% of total
Less than four	69	59.0	43	76.8	112	64.7
Four or more	48	41.0	13	23.2	61	35.3

Effects of Previous Critical Incidents

Firefighters were also asked about the experience of a previous Critical Incident and whether it affected them. The response choices were (a) no, (b) yes, it affected me, and (c), yes, but it did not affect me (See Figure 2). A Chi Square test of independence was significant, $\chi^2(2, N = 173) = 6.92, p = .03$. This indicates that the proportions between the groups for the responses were not similar. A larger proportion of the Not Trained group report they had not experienced a Critical Incident, while a higher proportion of Trained firefighters had experienced a Critical Incident but felt that it did not affect them.

Effect of Previous Incidents

Figure 2.

Effects of Treatment

The Trained and Not Trained firefighter groups were compared on: (a) levels of Critical Incident Stress, (b) firefighter coping methods, (c) the effect of the Critical Incident Stress training received, and (d) their recall of concepts and practices associated with CISM.

Firefighter Stress Levels - Impact of Events Scale-Revised (IES-R)

For the Trained group, 22 (18.8 %) firefighters had a total IES-R score of greater than 25, with a high score of 56, while 10 (11.7 %) firefighters scored higher than 40. For the Not Trained groups, 4 (7.1 %) firefighters had a total IES-R score of 25 or greater, with a high score of 34. A Chi Square test for independence was significant, $\chi^2(1, N = 149) = 4.37, p = .04$, with the proportion of firefighters with a high IES-R score being higher for the Trained group (see figure 3).

Firefighters with High Stress Symptoms (IES-R)

Figure 3.

Mean scores for the IES-R were compared between the Trained and Not Trained groups. Total IES-R means were calculated as well as the three IES-R subscales: (a) Problem-focused, (b) Avoidance, and (c) Hyperarousal. The Trained group mean scores were significantly higher than the Not Trained group for all measures except for the Hyperarousal subscale (see table 4). These results were contrary to predicted outcomes. Further analysis is required to account for these results.

Table 4

Comparison of Trained and Not Trained Means for the IES-R

IES-R and Subscales	Trained		Not Trained		t-test		
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>t</u>	<u>df</u>	<u>p</u>
Intrusive	6.86	5.53	5.06	4.43	1.99	147	.05
Avoidance	6.75	6.13	4.42	3.82	2.85	141	.005
Hyperarousal	2.85	3.59	1.92	2.35	1.9	138	.06
Total IES-R Score	16.46	13.65	11.51	9.43	2.58	131	.01

Note. n = 100 for the Trained group, and n = 49 for the Not Trained group.

Type of Incident for IES-R

After completing the IES-R questionnaire, firefighters were left a space to briefly describe the type of Critical Incidents they experienced that formed the basis for completing the IES-R. Data was coded into four main categories, (a) death or serious injury to a firefighter, (b) death or serious injury to a child, (c) accident with victim, and (d), medical call (see figure 4). A Chi Square test for independence was significant, $\chi^2(3, N = 115) = 14.26, p = .003$. Proportions between the Trained group and Not Trained group were not similar with respect to the type of event reported. Medical calls were reported proportionately higher by the Trained group and Accidents with victim was reported proportionately higher by the Not Trained group.

Figure 4.

Firefighter Coping - Ways of Coping Checklist-Revised (WCC-R)

Means were calculated for the five WCC-R subscales: (a) Problem-focused, (b) Avoidance, (c) Wishful-thinking, (d) Seeks Social Support, and (e), Blamed Self. In addition, a Total Positive Coping score was computed by adding the Problem-focused and the Seeks Social Support subscales together, as well as a Total Negative Coping Score by adding together the Avoidance, Wishful-thinking, and Blamed Self subscales.

Mean scores for the Trained group were significantly higher on all of the Total Negative Coping measure, the Avoidance, Wishful-thinking, and Blamed Self subscales. The Total Positive Coping measure, the Problem-focused and the Seeks Social Support subscale mean scores were not significantly different (see table 5). These results were contrary to predicted outcomes. Further analysis is required to determine factors that might account for these results.

Table 5

Comparison of Trained and Not Trained Means for the WCC-R

WCC-R and Subscales	Trained		Not Trained		t-test		
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>t</u>	<u>df</u>	<u>p</u>
Problem-focused	9.13	7.87	9.1	5.9	0	125.9	.97
Seeks Social Support	3.36	3.6	3	3.34	0.58	146	0.6
Total Positive Coping	12.49	10.43	12.1	8.43	0.23	146	0.8
Avoidance	5.17	4.36	3.54	3.01	2.38	146	.02
Wishful-thinking	3.02	3.7	1.86	2.18	2.4	143	.02
Blamed Self	0.78	1.43	0.34	0.87	2.29	141.4	.02
Total Negative Coping	8.97	8.19	5.74	5.02	2.96	141.1	.004

Note. n = 98 for the Trained group, and n = 50 for the Not Trained group.

Effect of CISM Training Received by the Trained Group

One of the primary assumptions heading into this research study was that the OFD (Trained group) was delivered a CISM training program while the GNFD (Not Trained group) did not receive this same training. Barring absences due to sickness, vacation, or working at a different station during the CISM training session, this assumption should have been the case for all OFD firefighters that participated in this study.

In order to confirm this assumption, a question on the CISQ required all firefighters to report how they learned about Critical Incident Stress. They were offered the following choices: (a) word of mouth, (b) attended training at work, (c) attended training at a seminar or conference, (d) attended a Critical Incident Stress Debriefing, or (e) learned about it on television or other media. Respondents were allowed to check as many as applied.

The initial focus of this question concerned the response (b), training at work. For the Trained group (OFD), 32 (27.4%) did not check response (b). Conversely, 20 (35.7%) firefighters for the Not Trained group (GNFD) indicated they received training at work. It was not expected that so many firefighters from the Trained group would indicate not receiving the training at work, and that so many firefighters from the Not Trained group had, in fact, reported receiving some type of Critical Incident Stress training at work.

The same question was also analyzed differently to determine the extent of training reported by the research sample. A count was made of the total checkmarks by each firefighter responding to how they learned about Critical Incident Stress. The possible range of responses was from zero to five. All but two firefighters from the Trained group and one firefighter from the Not Trained group were trained in at least one way, so that

98.3% reported having some background training in Critical Incident Stress. Table 6 shows the results of this count along with the percentages for the Trained and Not Trained groups. A Chi Square test of independence was not significant, $\chi^2(2, N = 170) = 1.83$, $p = .40$, since the proportion of number of ways trained between the Trained and Not Trained groups was similar.

Almost all (98.3 %) of the firefighters from both groups reported learning about Critical Incident Stress. Since all but three firefighters in the sample were exposed to some form of Critical Incident Stress training, it is not possible to get a distinct measure of the effect of the Critical Incident Stress training delivered to the Trained group.

Table 6

Comparison of Number of Ways Trained

Count (ways trained)	Trained		Not Trained		Total	
	<u>n</u>	% of group	<u>n</u>	% of group	<u>n</u>	% of total
1 way	70	59.8	37	66.1	107	61.8
2 ways	23	19.7	12	21.4	35	20.2
3 or more ways	22	19.1	6	10.9	28	16.3

Note. n = 115 for the Trained group, and n = 55 for the Not Trained group.

Comparison of CISM Knowledge

The Critical Incident Stress Questionnaire (CISQ) was devised to gather demographic information about the Trained and Not Trained groups. In addition, several questions were included that tested firefighter knowledge of CISM concepts and how they would put those ideas into practice. They were tested on their understanding of the term Critical Incident Stress, the definition of a Critical Incident, ways of positive family communication and coping after a Critical Incident, and their use of social support

systems. In general, a higher mean score indicated better knowledge recall, or better use of positive stress management practices. The score for the definition of a Critical Incident was coded as a discrete variable with one correct answer. All incorrect answers were coded with a zero. Mean scores for the Trained and Not Trained groups were not significantly different for all Critical Incident Stress knowledge measures (see table 7).

Table 7

Comparison of Trained and Not Trained Means for CISM Knowledge

CISM Knowledge Measures	Trained		Not Trained		t-test		
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>t</u>	<u>df</u>	<u>p</u>
Understanding of Term - CIS	4.36	0.62	4.27	0.59	0.92	171	.4
Definition of Critical Incident	0.59	0.49	0.63	0.49	-0.4	171	.7
Positive Family Communication	3.74	1.18	3.8	1.01	-0.3	171	.8
Positive Family Coping	6.95	1.37	7.07	1.09	-0.6	171	.6
Use of Support Systems	16.7	21	25.1	35.3	-1.9	171	.06

Note. $n = 117$ for the trained group, and $n = 56$ for the Not Trained group.

Additional Factors Affecting Stress Levels and Coping Methods

Further analyses were performed to determine what factors were related to Critical Incident Stress levels and coping methods. Since CISM training did not differ between the two samples, these additional tests were done on the entire sample. Specific measures such as: (a) previous Critical Incidents, (b) the effects of previous Critical Incidents, and (c) attendance at debriefings were examined, along with demographic variables such as age and experience.

Previous Critical Incidents

Firefighters were asked about Critical Incidents that they had experienced, previous to the last six months. OFD firefighters reported experiencing a higher proportion of Critical Incidents than the GNFD. A Chi Square test of independence was significant, $\chi^2(1, N = 173) = 6.01, p = .01$. See Table 8 to view the descriptive statistics.

Table 8

Number of Previous Critical Incidents

Exposure to Critical Incidents	OFD		GNFD		Total	
	<u>n</u>	% group	<u>n</u>	% group	<u>n</u>	% of total
No Critical Incidents	17	14.5	17	30.4	34	19.7
Had Critical Incidents	100	85.5	39	69.6	139	80.3

The Effect of Attendance at Critical Incident Stress Debriefings

T- tests were conducted to determine whether there was a relationship between attendance at a Critical Incident Stress Debriefing and the IES-R or positive and negative coping. Positive coping was marginally significant, but IES-R and Negative coping were not. See table 9 for the descriptive statistics.

Table 9

Effect of CIS Debriefing on Stress and Coping

Stress and Coping Scales	CISD		No CISD		t-test		
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>t</u>	<u>df</u>	<u>p</u>
Total IES-R	16.8	13.7	13.8	11.91	1.38	146	.2
WCC-R Tot. Pos. Coping	14.3	11.2	11.3	8.81	1.76	146	.08
WCC-R Total Neg. Coping	8.48	8.37	7.55	6.87	0.73	146	.5

Note. n = 52 for CISD group, n = 96 for no CISD group.

The Effect of Previous Critical Incidents

As noted previously, fire fighters indicated whether they had been involved in a previous critical incident and whether it affected them. To determine the relationship of this variable with stress, a univariate analysis of variance was performed with the IES-R and coping as dependent variables. Mean differences were significant for the Total IES-R score, $F(2, 148) = 6.66$, $p = .002$ (see figure 5) with stress higher when the incident was reported to have an effect. With Total Positive and Total Negative coping as dependent variables, there was no significant mean differences when univariate analysis of variance was done (see table 10).

Figure 5.

Table 10

Effects of Previous Critical Incidents on Coping

Measures	No CI		CI no Effect		CI Effect		Univariate ANOVA	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>F</u>	<u>p</u>
Pos. Coping	11.8	8.62	11.7	9.99	13.2	10.05	0.4	0.67
Neg. Coping	5.71	6.91	7.82	8.35	8.76	6.54	1.49	0.23

Note. $n = 24$ for No CI; $n = 61$ for CI no Effect; $n = 63$ for CI Effect.

Correlation of Age and Experience with IES-R and Coping

Bivariate correlations were performed to compare age, and experience with the IES-R and WCC-R measures. There were no significant relationships between these demographic variables and the IES-R or WCC-R, however Total IES-R was highly correlated with Positive Coping and Negative Coping. Positive Coping was also highly correlated to negative Coping (see table 11).

Table 11

Correlation Matrix for Age & Experience with the IES-R & WCC-R

	Age	Experience	Total IES-R	Pos. Coping	Neg. Coping
Age	1	.85*	0.13	0.05	0.1
Experience		1	0.15	0.11	0.09
Total IES-R			1	.49*	.74*
Pos. Coping				1	.44*
Neg. Coping					1

Note. * significant at the .05 level.

Discussion

The focus of this study was to examine the effectiveness of a fire department Critical Incident Stress Management (CISM) program in reducing the stress symptoms of firefighters following exposure to traumatic emergency events. A quasi-experimental non-equivalent control group design was used. Firefighters receiving the Critical Incident Stress Management (CISM) training were compared to a cohort group of firefighters from two other urban fire departments through the administration of a detailed questionnaire package. Testing was completed during shift work hours and selection was based on the availability of firefighters during a two month testing window.

Differences between the groups on measures of traumatic stress symptoms, coping strategies, and knowledge of key components of the stress management program formed the basis for determining program efficacy. In particular, it was felt that firefighters receiving the training would report fewer symptoms of traumatic stress as a result of using better coping methods. They were also expected to have a better knowledge of key components of that training program as compared to firefighters that did not receive the specific training.

Results of the testing did not support these assertions. In fact, the firefighters that were trained in Critical Incident Stress prevention scored significantly higher on most measures indicating that they had higher levels of traumatic stress symptoms in general, and were not significantly better at using appropriate coping strategies to deal with those symptoms. They also did not display a significantly higher degree of knowledge about the Critical Incident Stress training. In the absence of support for the research hypotheses,

attempts were made to determine what internal and external factors might have played a role in affecting the outcome of this study.

Effect of CISM Training

While normally reserved for discussion of the limitations of research with respect to internal validity, it is necessary to address the effect of diffusion of treatment at an early stage in the case of this study. Diffusion of treatment occurs when the treatment becomes available in one form or another to the control group (Cook and Campbell, 1979). When this contamination occurs, it is then very difficult to ascertain a true effect of the treatment variable through data analysis.

In this research study, it was determined that most firefighters from the entire research sample reported being exposed to some form of CISM training. Since training efficacy was being researched, it became apparent that it was available to more than just OFD firefighters.

When the original training program was delivered to the OFD firefighters in 1997, it was the first attempt in the Ottawa area, to deliver preventative CISM training to firefighters based on the principles of stress inoculation (Meichenbaum, 1983). Instead of waiting until firefighters had been exposed to a traumatic event, they were given knowledge about stress reactions and ways to positively cope with their reactions to the event. It was hoped that over a period of time, this knowledge would inoculate firefighters when they experienced additional Critical Incidents. The intention of this study was to try and determine the effect of that preventative training for OFD firefighters by comparing their stress levels to similar groups of firefighters that did not receive the training.

The increasing popularity of CISM over the last few years has seen it spread into the mainstream from its previous exclusivity within the emergency services. In addition to numerous opportunities to attend CISM certification seminars and participate in interventions delivered for firefighters after Critical Incidents, one is just as likely to hear about debriefings being held for employees of banks after robberies, as well as victims of automobile crashes (Hobbs et al, 1996).

In the USA, CISM has become an emergency services business (Gist & Woodall, 1995; Linton, 1995); and typical of the migration of American trends, this business has made its way north into Canada. Jeffrey Mitchell (1983) makes regular and frequent trips to all parts of Canada to deliver CISM certification workshops for many different emergency services and counseling service providers. Evidence of the infiltration of Mitchell's CISM culture into the emergency services mainstream is shown by the fact that virtually all the firefighters in this study, save three, indicated they had learned about CISM in some manner.

Additionally, the exposure of the majority of firefighters in this research to some form of CISM training affected the assessment of training differences with respect to knowledge and practices of CISM. OFD and GNFD firefighters were similar in reporting their awareness of primary CISM concepts. There were no significant differences in their understanding of Critical Incident Stress, and its definition, or in their choices of appropriate coping strategies when dealing with their families after experiencing a bad incident at work. One marginally significant difference did exist however, in that GNFD firefighters reported more use of their social support systems. Nonetheless, diffusion of

treatment is a likely factor in the similar levels of CISM awareness reported by both groups of firefighters.

Comparison of Stress Levels

There are several indications that the OFD firefighters had higher stress levels than their GNFD cohorts. OFD firefighters reported significantly higher levels of stress symptoms experienced as a result of exposure to critical incidents at work than the GNFD firefighters. They also indicated significantly higher scores on the IES-R for intrusive and avoidance symptoms, and marginally significant higher scores on hyperarousal symptoms. In addition, a larger proportion of the OFD group had a total IES-R score of greater than 25 than the GNFD group.

Factors Affecting Stress Levels

When it became apparent that the majority of firefighters in the study reported access to some form of CISM training, alternative explanations for differences in stress levels between the OFD and GNFD were examined. Two main lines of reasoning were explored:

1. Differences in Responses - higher volumes of calls, or types of calls that could have the potential to differentially impact stress levels;
2. Response Intensity - experience with incidents that were more intense or traumatic could have affected levels of stress.

The OFD responded to a greater overall volume of emergency incidents than the GNFD. While this was not statistically significant using the fire station as the unit of analysis, Ottawa firefighters did estimate that they responded to more calls per shift than

GNFD firefighters. Thus, the estimates of the OFD firefighters indicate that the differences are of subjective importance.

When station response means were analyzed, medical responses were marginally higher for the OFD. The case can be made that because they responded to twice the mean number of Medical responses, they may have experienced more incidents that would potentially cause additional stress. This statement on its own cannot be justified, but there is significant support for the idea because a higher proportion of OFD firefighters reported that medical calls were the event that they recalled when completing the IES-R. Whether this has more to do with the higher volume of medical incidents overall, or the perception of medical incidents as being more stressful, would only be speculation.

However, some evidence does exist that suggests repeated exposures to duty related incidents such as efforts to resuscitate cardiac arrest patients can be stressful (Myles, Levine, Ramsden, & Swanson, 1990). Conversely, in a study of American and Canadian emergency personnel, Corneil et al. (1999) reported that a relationship between increased stress measured on the Impact of Events Scale and potentially traumatic incidents such as medical responses, was not significant.

Finally, OFD firefighters reported that they attended significantly higher numbers of previous Critical Incidents as well as incidents that had the potential to be Critical Incidents when compared to the GNFD firefighters. In the process of reporting these previous Critical Incident levels, they also reported significantly higher scores on the IES-R when they indicated they had experienced a Critical Incident that affected them.

Altogether, there are significant indications that the OFD firefighters responded to a higher percentage of incidents sufficiently intense so as to be recalled as being more

traumatic in nature. As such, it has been shown that Critical Incidents can elicit more symptoms of elevated stress than typical emergency responses (Beaton & Murphy, 1991; McFarlane & Yehuda, 1996; Murphy, 1991). Therefore it is reasonable to suggest that OFD firefighters may have reported elevated stress levels on the IES-R as a result of their significantly increased exposure to higher stress incidents.

Comparison of Coping Methods

In general, coping refers to cognitive and behavioral efforts to manage specific demands that are perceived to overwhelm the resources of an individual (Lazarus & Folkman, 1984). Specifically, coping has two major functions: to deal with the problem that is causing stress, called problem-focused coping, and to balance emotional responses to the problem, called emotion-focused coping (Folkman & Lazarus, 1980).

The present study used the Ways of coping Checklist-Revised (Vitaliano et al, 1985) which measures coping by breaking it down into subscales that represent various types of coping behavior. Similar to the use of a total IES-R score to represent levels of firefighter stress, these coping subscales were combined into two logical coping dimensions representing: (a) positive coping, which was a total of the problem-focused and seeks social support subscales, and (b) negative coping, a combination of the avoidance, blamed self and wishful-thinking subscale scores. While these symbolic dimensions of coping do not concur exactly with the Folkman and Lazarus (1980) terms, they facilitated analysis of coping behavior with stress levels in this research.

In this study, there was a strong positive relationship between high stress symptoms as reported on the IES-R and both positive and negative coping. While direction of causation is difficult to assess, it is likely that more stressful events lead to higher stress

symptoms and greater efforts at all forms of coping, both positive and negative. This is supported by Marmar, Weiss, Metzler, and Delucchi (1996) who used the Ways of Coping Questionnaire (Folkman & Lazarus, 1980) with a sample of emergency personnel. They explained their high positive association of stress with all forms of coping as a reflection of the greater demand on all coping resources by high levels of exposure to Critical incidents.

Beaton et al. (1999) also found avoidance coping to be strongly associated with Impact of Event scores in a sample of emergency workers. Additionally, they reported that age and experience were not significantly associated with stress levels or coping. This concurs with the findings of the present study which also indicated no significant relationships between age or experience and the IES-R or positive and negative coping.

The high correlation between the IES-R and positive and negative coping in this study, as well as between positive and negative coping alone, may be partially explained by reasoning previously applied to differentiate the levels of stress between the OFD and GNFD firefighters. OFD firefighters reported significantly higher proportions of Critical Incidents and potential Critical Incidents. Linking this to the higher percentage of medical responses being the primary reason for attendance at debriefings, it may be that these incidents had outcomes that could not be changed; or they were so intense as to overwhelm emotional resources during the event. It could be argued that these conditions could cause higher stress and the use of all forms of coping, both positive and negative.

This explanation has some merit, especially when one considers the scenario of heart attack victims during emergency resuscitation attempts and the current low (3.8 %) survival rate (Ottawa Transition Board, 2000). In the initial stages of such an event, great efforts are used to bring about a successful conclusion, but as the negative outcome

becomes apparent, coping behaviors may change. As Roth & Cohen (1986) relate, problem-focused strategies allow for ventilation of emotions or take advantage of trying to gain more control over the situation, while emotion-focused coping strategies are useful in that they may reduce stress and anxiety when an event is uncontrollable.

Previous research has offered different interpretations of how problem-focused and emotion-focused coping are related to levels of stress. Some studies maintain that high problem-focused and low emotion-focused coping help to reduce stress levels (Mattlin, Wethington, and Kessler, 1990; Solomon, Mikulincer, & Avitzur, 1988), and others contend that both strategies are necessary for successful processing of the event (Horowitz, 1976; Shontz, 1975). This study would support the use of both strategies under high stress, but provides no evidence for efficacy. Higher coping efforts are associated with higher stress symptoms.

General Implications of the Research Findings

While there were no significant differences between the firefighter groups for their knowledge of CISM, at least the general implications of this are somewhat positive. The fact that the scores were fairly high indicated that both groups had a good understanding of the CISM concepts and coping practices on which they were questioned. What may be less positive about this result is that firefighters who are more stressed, also use more coping, negative as well as positive.

Part of the reason that stressed firefighters implemented negative coping strategies may be because of key differences between CISM training and Stress Inoculation Training. The present CISM training program was limited in its use of the rehearsal stage of positive coping behaviors. Little emphasis was placed on decreased use of negative coping. Better

familiarization with skills through behavioral rehearsal, role playing and follow up may serve to reinforce and prime firefighters to put these skills to work (Meichenbaum, 1994)

As far as generalizing to other fire departments is concerned, the one thing that can be said, is that similar numbers of firefighters reporting relatively high scores on the IES-R, have been found in other research samples of firefighters (e.g., Beaton and Murphy, 1993; Corneil, 1993; Corneil et al, 1999). This indicates that firefighters are being affected by experiencing bad incidents, and that increased efforts must be made to extend the necessary help to firefighters that are in this category.

General Limitations of Study

Diffusion of treatment, the major limitation of internal validity, has already been discussed. The time that passed between the introduction of the treatment and the emerging popularity and availability of workshops on CISM were responsible for this outcome. With most firefighters now exposed to CISM in some form, it is difficult to find an appropriate comparison group, a challenge which will be addressed in the section on recommendations.

When the initial design of the experiment was being developed, additional measures such as Rotter's (1966) Locus of Control Scale were considered. Because a limit was set on a reasonable number of questions to be included in the study, it was rejected. In retrospect, this instrument would have given a clearer indication of how firefighters appraised Critical Incidents and subsequently chose specific coping strategies. This information might have given a clearer picture of why OFD firefighters chose to use higher levels of negative coping.

The fact that the proportion of OFD firefighters scoring high on the IES-R was comparable to previous research on emergency personnel, gives some external validity to

the study. However, because the instrument used was the IES-R, it limits generalizing to other studies using the earlier version of this scale. Under the circumstances it may have been better to go with the original Impact of Events Scale which has been used in several studies involving emergency personnel.

Recommendations for Further Research

This research left issues about the efficacy of CISM training unanswered. Because of the general availability of this training in fire departments at this time, it is unlikely that appropriate control groups can be found. Instead, a pre-test, post-test design or longitudinal study to track stress and coping strategies in relation to the occurrence of critical incidents, would make it possible to address some of the interesting questions about the relationship between training, stress and coping over time. While it was clear from the results of this study that coping is higher with increased stress, more data are required to determine whether the increased coping is useful. Specific efforts to increase positive coping while reducing negative coping could be tracked.

With the present study results in hand, further research into CISM and other stress management training should be investigated to address problem areas that were revealed. In particular, increased response levels for medical calls necessitates research into the development of alternate coping strategies to address the stress of dealing with situations where probable outcomes will not always be desirable.

Due to shift work constraints and the logistical challenges of training larger groups of firefighters that must remain at specific workplaces, research into computer based interactive training should also be considered. It has the potential to be used by firefighters more frequently, and would allow self-regulation of learning pace for each individual.

Considerable time, effort and funding has already been allocated to the development of programs and the subsequent training of firefighters in Critical Incident Stress Management. However, there is little research to this date that demonstrates the effectiveness of this venture. Given the current amalgamation of several fire departments into one large fire service, and the opportunity to impact future learning strategies, careful development of plans to track the outcomes resulting from specific interventions, is required to optimize future training efforts.

References

- Admi, H. (1997). Stress intervention: A model of stress inoculation training. Journal of Psychosocial Nursing and Mental Health Services, 35 (8): 37-42.
- American Psychiatric Association. (1980). Diagnostic and statistical manual of mental disorders (3rd ed.). Washington, DC: Author.
- American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, DC: Author.
- Beaton, R. & Murphy, S. (1991). Social support and relationship conflict in firefighters. Paper presented at the third biannual Psychosocial Nursing Conference, University of Washington, Seattle, WA.
- Beaton, R., & Murphy, S. (1993). Sources of occupational stress among firefighter/EMTs and firefighter/paramedics and correlations with job-related outcomes. Prehospital and Disaster Medicine, 8. 140-150.
- Beaton, R., Murphy, S., Pike, K., & Jarrett, M. (1995). Stress-symptom factors in firefighters and paramedics. In S. Sauter, & L. Murphy (Eds.), Organizational risk factors for job stress (pp. 227-246). Washington, DC: APA Press.
- Bieliauskas, L. (1980). Life Events, 17-OHCS measures & psychological defensiveness in relation to aid-seeking. Journal of Human Stress, 6. 28-36.
- Bohl, N. (1991). The effectiveness of brief psychological interventions in police officers after critical incidents. In J. Reese, J. Horn, & C. Dunning (Eds.), Critical incidents in policing. Revised, (pp. 31-38). Washington, D. C.: U.S. Government Printing Office.

Breslau, N., Davis, G. C., Andreski, P., & Peterson, E. (1991). Traumatic events and posttraumatic stress disorder in an urban population of young adults. Archives of General Psychiatry 48 (3):216-222.

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

Cook, T.D., & Campbell, D.T. (1979). Quasi-experimentation: Design and analysis issues for field settings. Chicago: Rand McNally.

Corneil, W. (1993). Prevalence of post traumatic stress disorders in a metropolitan fire department. (unpublished Doctoral dissertation, John Hopkins University, Baltimore, MD).

Corneil, W., Beaton, R., Murphy, S., Johnson, C., & Pike, K. (1999). Exposure to traumatic incidents and prevalence of posttraumatic symptomatology in urban firefighters in two countries. Journal of Occupational Health Psychology, 4 (2):131-141.

Dienstbier, R. A. (1989). Arousal and physiological toughness: Implications for mental and physical health. Psychological Review, 96, 84-100.

Dunning, C. (1988). Intervention strategies for emergency workers. In M. Lystad (Ed.), Mental health response to mass emergencies, (pp. 284-307). New York: Bruner/Mazel.

Epstein, S. (1983). Natural healing processes of the mind: Graded stress inoculation as an inherent coping mechanism. In D. Meichenbaum & M. E. Jaremko (Eds.), Stress reduction and prevention, (pp. 39-66). New York: Plenum Press.

Everly, G. S., Flannery, R. B. & Mitchell, J. T. (2000). Critical incident stress management (CISM): A review of the literature. Aggression and Violent Behavior, 5 (1): 23-40.

Figley, C. R. (Ed.) (1995). Compassion fatigue: Coping with secondary traumatic stress disorder in those who treat the traumatized. New York: Brunner/Mazel.

Flin, R. (1996). Sitting in the hot seat: Leaders and teams for critical incident management. New York: John Wiley.

Folkman, S. & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. Journal of Health and Social Behavior, 21. 219-239.

Gist, R. , & Woodall, S. J. (1995). Occupational stress in contemporary fire service . Occupational Medicine: State of the Art Reviews, 10 (4), 763-777.

Griffiths, J. & Watts, T. (1992). The kempsey and grafton bus crashes: The aftermath. Lismore, NSW: Instructional Design Solutions, University of New England.

Helzer, J. E., Robins, L. N., & McEvoy, L. (1987). Post traumatic stress disorder in the general population: Findings of the epidemiologic catchment area survey. New England Journal of Medicine, 317. 1630-1634.

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

Hokanson, M. (1997). Evaluation of the effectiveness of the critical incident stress management program for the LA county fire department. Paper presented at the 4th World Congress on Stress, Trauma and Coping in the Emergency Services Professions, Baltimore, MD.

Horowitz, M. J. (1976). Stress response syndromes. New York: Aronson.

Horowitz, M. J., Wilner, N. & Alvarez, W. (1979). Impact of Event Scale: a measure of subjective stress. Psychosomatic Medicine, 41, 209-918.

International Association of Firefighters. (1993). 1992 death and injury survey. Washington, DC: International Association of Firefighters.

International Association of Firefighters. (1999) . 1999 death and injury survey. Washington, DC: International Association of Firefighters.

Jenkins, S.R. (1996). Social support and debriefing efficacy among emergency medical workers after a mass shooting incident. Journal of Social Behavior and Personality, 11, 477-492.

Kenardy, J. A., Webster, R.A., Lewin, T.J., Carr, V.J., Hazell, P.L. & Carter, G.L. (1996). Stress debriefing and patterns of recovery following a natural disaster. Journal of Traumatic Stress, 9 (1):37-49.

Kendall, P. (1983). Stressful medical procedures: Cognitive-behavioral strategies for stress management and prevention. In D. Meichenbaum and M. Jaremko (Eds.) Stress reduction and prevention. New York: Plenum Press.

Kessler, R.. C., Price, R., & Wortman, C. (1985). Social factors in psychopathology: stress, social support, and coping processes. Annual Review of Psychology, 36, 531-572.

Kilpatrick, D. G. & Resnick, H. S. (1993). PTSD associated with exposure to criminal victimization in clinical and community populations. In J.R.T. Davidson and E.B. Foa (Eds.), PTSD in review: Recent research and future directions, (pp.113-143).

Washington, DC: American Psychiatric Press.

Kranz, L. (1992). Jobs rated almanac, two. Mahwah, NJ: World Almanac.

Lazarus, R. S., & Folkman, S. (1984). Stress, appraisal and coping. New York: Springer.

Linton, J. C. (1995). Acute stress management with public safety personnel: Opportunities for clinical training and pro bono community service. Professional Psychology: Research and Practice, 26 (6): 566-573.

Maddi, S. R. & Kobasa, S. C. (1984). The hardy executive: Health under stress. New York: The Dorsey Press.

Marmar, C., Weiss, D., Metzler, T. & Delucchi, K. (1996). Characteristics of emergency services personnel related to peritraumatic dissociation during critical incident exposure. American Journal of Psychiatry, 153. 94-102.

Mattlin, J. A., Wethington, E. & Kessler, R. C. (1990). Situational determinants of coping and coping effectiveness. Journal of Health and Social Behavior, 31. 103-122.

McFarlane, A. (1988). The longitudinal course of posttraumatic morbidity: The range of outcomes and their predictors. Journal of Nervous and Mental Disease, 176. 30-39.

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

McFarlane, A., & Yehuda, R. (1996). Resilience, vulnerability and the course of posttraumatic reactions. In B van der Kolk, A. McFarlane, & L. Weisath (Eds.), Traumatic stress, (pp. 155-181). New York: Guilford Press.

Meichenbaum, D. (1996). Stress inoculation training for coping with stressors. The Clinical Psychologist, 49. 4-7.

Meichenbaum, D. & Cameron, R. (1983). Stress inoculation training: Toward a general paradigm for training coping skills. In D. Meichenbaum & M. E. Jaremko (Eds.), Stress reduction and prevention, (pp. 115-154). New York: Plenum Press.

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

Mitchell, J. T. (1988) Development and functions of a critical incident stress debriefing team. Journal of Emergency Medical Services, 13 (12): 42-46.

Mitchell, J. T. & Bray, G. (1990). Emergency services stress. New Jersey: Brady.

Moos, R. H. (Ed.) (1986). Coping with life crises: An integrated approach. NY: Plenum Press.

Murphy, S. (1991). Human responses to catastrophe. Annual Review of Nursing Research, 9, 57-76.

Myles, G., Levine, J., Ramsden, F. & Swanson, R. (1990). The impact of providing help: Emergency workers and cardiopulmonary resuscitation attempts. Journal of Traumatic Stress, 3, 305-313.

Novaco, R.W. (1977). Stress inoculation: A cognitive therapy for anger. Journal Of Consulting & Clinical Psychology, 45, 600-608.

Ottawa Transition Board. (2000). A service delivery model for ambulance services. Ottawa, ON: Fitch & Associates.

Paton, D. (1996). Training disaster workers: Promoting well-being and operational effectiveness. Disaster Prevention and Management, 5, 10-16.

Raphael, B. (1986). When disaster strikes. New York: Basic Books.

Raphael, B., Singh, B. & Bradbury, L. (1980). Disaster: The helper's perspective. Medical Journal of Australia, 2. 445-447.

Redburn, B. G. (1992). Disaster and rescue: worker effects and coping strategies. (Doctoral dissertation, University of Missouri-Kansas City). Dissertation Abstracts International, 54. 01-B.

Robinson, R.C & Mitchell, J.T. (1993). Evaluation of psychological debriefings. The Journal of Traumatic Stress, 6 (3): 367-383.

Roth, S. & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. American Psychologist, 41 (7): 813-819.

Rothschild, B. (1998). Post traumatic stress disorder: identification and diagnosis. Swiss Journal of Social Work, 25. 120-128.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs: General and Applied, 80. (1, Whole No. 609).

Selye, H. (1956) The stress of life. New York, NY: McGraw-Hill.

Shalev, A. (1996) Stress versus traumatic stress: From acute homeostatic reactions to chronic psychopathology. In B. van der Kolk, A. McFarlane and L. Weisaeth (Eds.), Traumatic stress: The effects of overwhelming experience on mind, body and society. New York: Guildford Press.

Shelton, R. & Kelly, J. (1995). EMS stress: An emergency responder's handbook for living well. Carlsbad, CA: Jems Communications.

Shlenger, W. E., Kulka, R. A., Fairbank, J. A., Hough, R. L., Jordan, B. K., Marmar, C. R., & Weiss, D. S. (1992). The prevalence of post traumatic stress disorder in

the Vietnam generation: a multimethod, multisource assessment of psychiatric disorder.

Journal of Traumatic Stress, 5, 333-363.

Shontz, F. C. (1975). The psychological aspects of physical illness and disability.

New York: Macmillan.

Solomon, Z., Mikulincer, M. & Avitzur, E. (1988). Coping, locus of control, social support, and combat-related posttraumatic stress disorder: A prospective study. Journal of Personality and Social Psychology, 55 (2): 279-295).

United States Fire Administration. (2000). Firefighter fatalities in the United States in 1999. Emmitsburg, MD: Federal Emergency Management Agency.

Vitaliano, P. P., Russo, J., Carr, J. E., Maiuro, R. D., & Becker, J. (1985). The ways of coping checklist: Revision and psychometric properties. Multivariate Behavioral Research, 20, 3- 26.

Wee, D. F., Mills, D. M. & Koelher, G. (1993). Stress response of emergency medical services personnel following the Los Angeles Civil Disturbances. In G. Koelher. Medical Care for the injured: The emergency medical response to the april 1992 Los Angeles civil disturbance. (EMSA # 393-01). Sacramento, CA: Emergency Medical Authority.

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

Wertkin, R. A. (1985). Stress-inoculation training: Principles and applications. The Journal of Contemporary Social Work, 20, 611-616.

Western Management Consultants. (1996). The medical services branch CISM evaluation report. Edmonton, AB: Western Management Consultants.

Williams, S., & Cooper, C. L. (1998). Measuring occupational stress: Development of the pressure management indicator. Journal of Occupational Psychology, 3 (4): 306-321.

Wollman, D. (1993). Critical incident stress debriefing and crisis groups: A review of the literature. Group, 17 (2): 70-83.

Appendix A

Participant Information - Firefighter Stress Study

Age: _____ Number of years as a firefighter: _____

Gender: Male ☐ Female ☐

Present Rank: Officer ☐ Firefighter ☐

Fire Department: _____ Fire Station: _____

Length of time at that station: _____ Previous Station: _____

Present Relationship Status: (check all that apply)

_____ Single	_____ Long-term live-in relationship
_____ Dating	_____ Married
_____ Separated/ Divorced	_____ Widowed

1. **Estimate** the number of calls you respond to on a typical shift (e.g., 42 hours) - choose one.
 - a. Less than 5.
 - b. 5 to 10.
 - c. 11 to 15.
 - d. 16 to 20.
 - e. more than 20.
2. Mark an X on the line to estimate the distribution of your crew's response to Medical calls compared to Fire & other calls.

Fire & other calls

Medical calls

100%

75%

50%

75%

100%
3. How many hours of "quality time" you spend per week (playing, talking, hanging out).

_____ with immediate family

_____ with extended family

_____ with friends

_____ by yourself
4. Do you understand what is meant by the term "Critical Incident Stress?"
 - a. No, never heard of it.
 - b. Heard of it, but don't know what it means.
 - c. I think I know what it means.
 - d. I generally understand the term.
 - e. Definitely understand the term.
5. If yes, how did you learn about it? (Circle all responses that apply)
 - a. Word of mouth.
 - b. Attended training at work.
 - c. Attended training at a seminar or conference.
 - d. Attended a Critical Incident Stress Debriefing.
 - e. Television and/or other media.
6. A Critical Incident can be defined as: (circle the best response)
 - a. An incident response during the shift that may interfere with your ability to function properly at the scene or later on.
 - b. A conflict at work with a colleague.
 - c. An incident response likely to hinder your ability to cope.
 - d. (a) and (c).
 - e. All of the above.

7. After you have experienced a bad call at work, which of the following communication methods would be better for you and your family: (circle all that apply)
- a. Avoid talking about the experience with them.
 - b. Let them know what feelings you are experiencing without sharing explicit details about the incident.
 - c. Do not show emotions in front of your children.
 - d. Let children know you are feeling bad about something that happened at work and that they have done nothing wrong.
 - e. Try to work things out on your own and leave them out of it.
8. The following are ways to cope following a Critical Incident: (circle all the responses that you think would be beneficial in reducing the level of stress).
- a. Go out for a big night on the town.
 - b. Talk about the experience with someone I trust at work or a good friend.
 - c. Deal with it on my own.
 - d. Keep really busy so I don't have time to think about the experience.
 - e. Spend time at a favorite hobby or leisure activity.
 - f. Increase my exercise routine and work it off.
 - g. Take on extra projects or more work to keep occupied.
 - h. Eat a healthy, balanced diet.
 - i. Increase my alcohol consumption to numb out my feelings.
9. Have you ever participated in a "Critical Incident Stress Debriefing?"
- a. Yes
 - b. No
 - c. Was asked to participate but chose not to.
10. If you have attended a "Critical Incident Stress Debriefing", how long ago did it occur?
(IF NOT, PROCEED TO QUESTION #14).
_____ last three months	_____ last six months
_____ last year	_____ longer than one year
11. If you have attended a "Critical Incident Stress Debriefing", briefly describe the nature of the incident for which the debriefing was held.
-
-
-

Please use the scales below to answer each question by circling the relevant number:

- 12. Was the debriefing beneficial to you? (e.g., reduce your stress level, better able to deal with the experience, felt better after hearing what everyone else said, learned better ways to cope with stress).**

1	2	3	4	5
very little benefit	not much benefit	some benefit	much benefit	very beneficial

- 13. In your opinion, was the debriefing helpful to others participating in the debriefing?**

1	2	3	4	5
no help	of little help	of some help	much help	very helpful

- 14. Are you satisfied with the level of training or help available through your work to deal with stress management?**

1	2	3	4	5	6
very much dissatisfaction	much dissatisfaction	some dissatisfaction	some satisfaction	much satisfaction	Very much satisfaction

- 15. Do you think that Critical Incident Stress Management can be beneficial for reducing stress?**

1	2	3	4	5
very little benefit	not much benefit	some benefit	much benefit	very beneficial

- 16. Estimate the number of potential 'critical incidents' that your crew responded to in the last six months.**

- a. None.
- b. 3 or less
- c. 4 - 7
- d. 7 - 10
- e. More than 10.

17. Listed below are a number of types of 'Critical Incidents'. Please check off all the incidents that you have responded to over the last six months.

- serious vehicle accident with injuries. _____
- incident involving serious injury to a child. _____
- incident where there was a threat of you being seriously injured. _____
- incident with a lot of media attention. _____
- incident involving a victim that you knew. _____
- incident with serious injury to a firefighter. _____

18. Have you been involved in a 'critical incident' previous to the last six months?

- a. Yes and it affected me.
- b. No
- c. Yes, but I did not feel that it affected me.

19. If yes, how long ago did it occur.

- a. Six months to a year.
- b. One to two years ago.
- c. Two to five years ago.
- d. Five to ten years ago.
- e. Longer than ten years ago.

20. Briefly describe the nature of that incident.

21. Which of the following is presently causing you the most stress? (Choose one)

- a. Medical calls
- b. Fire service amalgamation
- c. Relationships at work
- d. Transfers
- e. Relationships at home

Impact of Events Scale-Revised

Instructions: The following is a list of difficulties that people sometimes experience after stressful life events. Think back to the most upsetting incident that you responded to while at work over the last six months. How much were you distressed or bothered by these difficulties? Please read each item, and then indicate how distressing each difficulty was for you during the week following that incident by circling the most appropriate answer.

		Not at all	A little bit	Mod- erate- ly	Quite a bit	Ex- treme- ly
1.	Any reminder brought back feelings about it.	0	1	2	3	4
2.	I had trouble staying asleep.	0	1	2	3	4
3.	Other things kept making me think about it.	0	1	2	3	4
4.	I felt irritable and angry.	0	1	2	3	4
5.	I avoided letting myself get upset when I thought about it or was reminded about it.	0	1	2	3	4
6.	I thought about it when I didn't mean to.	0	1	2	3	4
7.	I felt as if it hadn't happened or wasn't real.	0	1	2	3	4
8.	I stayed away from reminders about it.	0	1	2	3	4
9.	Pictures about it popped into my mind.	0	1	2	3	4
10.	I was jumpy and easily startled.	0	1	2	3	4
11.	I tried not to think about it.	0	1	2	3	4
12.	I was aware that I still had a lot of feelings about it, but I didn't deal with them.	0	1	2	3	4
13.	My feelings about it were kind of numb.	0	1	2	3	4
14.	I found myself acting or feeling like I was back at that time.	0	1	2	3	4
15.	I had trouble falling asleep.	0	1	2	3	4
16.	I had waves of strong feelings about it.	0	1	2	3	4

		Not at all	A little bit	Mod- erate- ly	Quite a bit	Ex- treme- ly
17.	I tried to remove it from my memory.	0	1	2	3	4
18.	I had trouble concentrating.	0	1	2	3	4
19.	Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart.	0	1	2	3	4
20.	I had dreams about it.	0	1	2	3	4
21.	I felt watchful and on guard.	0	1	2	3	4
22.	I tried not to talk about it.	0	1	2	3	4

About how long ago did this incident occur? _____

Briefly describe the nature of this incident.

Ways of Coping Checklist-Revised

Listed below are several possible ways of dealing with problems and troubles in one's life. Think about the same incident you recalled in the previous questionnaire, and indicate to what extent you used each of the coping methods below to deal with this problem.

		Did not use	Used a Little	Used quite a bit	Used a great deal
1.	Bargained or compromised to get something positive from the situation.	0	1	2	3
2.	Went on as if nothing had happened.	0	1	2	3
3.	Concentrated on something good that could come out of the whole thing.	0	1	2	3
4.	Hoped a miracle would happen.	0	1	2	3
5.	Felt bad that I couldn't avoid the problem.	0	1	2	3
6.	Talked to someone to find out about the situation.	0	1	2	3
7.	Tried not to burn my bridges behind me, left things open somewhat instead.	0	1	2	3
8.	Wished I was a stronger person - more optimistic and forceful.	0	1	2	3
9.	Kept my feelings to myself.	0	1	2	3
10.	Blamed myself.	0	1	2	3
11.	Changed or grew as a person in a good way.	0	1	2	3
12.	Slept more than usual.	0	1	2	3
13.	Wished that I could change what had happened.	0	1	2	3
14.	Made a plan of action and followed it.	0	1	2	3
15.	Accepted sympathy and understanding from someone.	0	1	2	3
16.	Accepted the next best thing to what I wanted.	0	1	2	3
17.	Wished I could change the way that I felt.	0	1	2	3

		Did not use	Used a Little	Used quite a bit	Used a great deal
18.	Got mad at the people or things that caused the problem.	0	1	2	3
19.	Came out of the experience better than when I went in.	0	1	2	3
20.	Criticized or lectured myself.	0	1	2	3
21.	Tried not to act too hastily or follow my own hunch.	0	1	2	3
22.	Daydreamed or imagined a better time or place than the one I was in.	0	1	2	3
23.	Changed something so things would turn out all right.	0	1	2	3
24.	Tried to forget the whole thing.	0	1	2	3
25.	Got professional help and did what they recommended.	0	1	2	3
26.	Just took things one step at a time.	0	1	2	3
27.	Tried to make myself feel better by eating, drinking, smoking, or taking medication.	0	1	2	3
28.	I know what had to be done, so I doubled my efforts and tried harder to make things work.	0	1	2	3
29.	Talked to someone who could do something about the problem.	0	1	2	3
30.	Had fantasies or wishes about how things might turn out.	0	1	2	3
31.	Avoided being with people in general.	0	1	2	3
32.	Realized I brought the problem on myself.	0	1	2	3
33.	Came up with a couple of different solutions to the problem.	0	1	2	3
34.	Thought about fantastic or unreal things (like a miracle happening, or that my actions would help to save a life) that made me feel better.	0	1	2	3
35.	Accepted my strong feelings, but didn't let them interfere with other things too much.	0	1	2	3

		Did not use	Used a Little	Used quite a bit	Used a great deal
36.	Asked someone I respected for advice and followed it.	0	1	2	3
37.	Kept other from knowing how bad things were.	0	1	2	3
38.	Changed something about myself so I could deal with the situation better.	0	1	2	3
39.	Talked to someone about how I was feeling.	0	1	2	3
40.	Wished the situation would go away, or somehow be finished.	0	1	2	3
41.	Stood my ground and fought for what I wanted.	0	1	2	3
42.	Refused to believe it happened.	0	1	2	3

Pressure Management Indicator

This section of the questionnaire is concerned with how satisfied or dissatisfied you feel about your job.

Please use the scale below to answer each question by circling the relevant answer.

	1 Very dissatisfied	2 Much dissatisfaction	3 Some dissatisfaction	4 Some satisfaction	5 Much satisfaction	6 Very satisfied			
1.	Communication and the way information flows around your organization.			1	2	3	4	5	6
2.	The actual job itself.			1	2	3	4	5	6
3.	The degree to which you feel 'Motivated' by your job.			1	2	3	4	5	6
4.	The style of supervision that your supervisors use.			1	2	3	4	5	6
5.	The way changes and innovations are implemented.			1	2	3	4	5	6
6.	The kind of work or tasks you are required to perform.			1	2	3	4	5	6
7.	The degree to which you feel that you can personally develop or grow in your job.			1	2	3	4	5	6
8.	The way in which conflicts are resolved in your organization.			1	2	3	4	5	6
9.	The degree to which your job taps the the range of skills which you feel you possess.			1	2	3	4	5	6
10.	The psychological 'feel' or climate that dominates your organization.			1	2	3	4	5	6
11.	The design or shape of your organization's structure.			1	2	3	4	5	6
12.	The degree to which you feel extended in your job.			1	2	3	4	5	6

ALMOST ANYTHING CAN BE A SOURCE OF PRESSURE AND PEOPLE PERCEIVE THINGS DIFFERENTLY.

The following items are all potential sources of pressure. Please rate them according to the amount of pressure you think they have placed on you during the last three months. Answer the questions as they actually apply to you in your job.

	1	2	3	4	5	6			
	very definitely is not a source	Definitely is not a source	Generally is not a source	Generally is a source	Definitely is a source	Very definitely is a source			
1.	Taking my work home.			1	2	3	4	5	6
2.	Inadequate guidance and backup from superiors.			1	2	3	4	5	6
3.	Lack of consultation and communication.			1	2	3	4	5	6
4.	Not being able to ‘switch off’ at home.			1	2	3	4	5	6
5.	Keeping up with new techniques, ideas, technology or innovations.			1	2	3	4	5	6
6.	Inadequate or poor quality of training/ management development.			1	2	3	4	5	6
7.	Attending meetings.			1	2	3	4	5	6
8.	Lack of social support by people at work.			1	2	3	4	5	6
9.	Having to work shift work.			1	2	3	4	5	6
10.	Conflicting job tasks and demands in the role I play.			1	2	3	4	5	6
11.	Discrimination and favouritism.			1	2	3	4	5	6
12.	Feeling isolated.			1	2	3	4	5	6
13.	A lack of encouragement from superiors.			1	2	3	4	5	6
14.	Demands my work makes on my relationship with my partner/children.			1	2	3	4	5	6
15.	Being undervalued.			1	2	3	4	5	6

	1	2	3	4	5	6
	very definitely is not a source	Definitely is not a source	Generally is not a source	Generally is a source	Definitely is a source	Very definitely is a source
16.				1	2	3
Inadequate feedback about my own performance.					4	5
17.				1	2	3
Demands that my work makes on my private/social life.					4	5
18.				1	2	3
Changes in the way you are asked to do your job.					4	5
19.				1	2	3
Simply being 'visible' or 'available'.					4	5
20.				1	2	3
Factors not under your direct control.					4	5
21.				1	2	3
Morale and organizational climate.					4	5
22.				1	2	3
Characteristics of the organization's structure and design.					4	5