The Psychological Impact of Repeated Indirect Exposure to Trauma: An Investigation of the Role of Perceived Social Support and Hardiness as Moderators of Disruption in Cognitive Schemata Among a Sample of Paramedics

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THE PSYCHOLOGICAL IMPACT OF REPEATED INDIRECT EXPOSURE TO TRAUMA: AN INVESTIGATION OF THE ROLE OF PERCEIVED SOCIAL SUPPORT AND HARDINESS AS MODERATORS OF DISRUPTION IN COGNITIVE SCHEMATA AMONG A SAMPLE OF PARAMEDICS

A DISSERTATION SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL IN CANDIDACY FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF COUNSELING PSYCHOLOGY

BY

MATTHEW GALLOUCIS

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CHAPTER I

INTRODUCTION

Psychological Theories of Stress and Stress Resistance

Resources

Over the last 20 years psychologists have been interested in the impact of stress on an individual's health and general well being. This research has helped to identify the physiological and psychological effects of various types of stressors. It has also clarified the etiology of specific forms of psychopathology that may result from exposure to these conditions. Psychological theories have emphasized the multidimensional nature of stress and the factors that may influence an individual's response to it.

The relationship between stress and adverse physical or psychological response is not direct. There are several factors that may moderate an individual's response to stressful events (Cohen, Horowitz, Lazarus, Moos et.al., 1982). These include person (e.g., personality traits, coping dispositions, personal resources, age, experiences), environmental (e.g., social supports, organizational and cultural factors) and cognitive-behavioral (e.g., appraisal and coping) factors.
Lazarus (1966) emphasized the importance of cognitive appraisal in determining whether an individual perceives an event as stressful. He hypothesized that if an individual has the resources to meet the demands of an event or does not perceive it as threatening, there will be minimal subjective distress. An individual may also appraise an event to be challenging or offering an opportunity for mastery. This optimistic appraisal facilitates the utilization of effective coping behavior. Lazarus and Folkman (1984) emphasized that commitments and existential beliefs are important person factors affecting appraisal of an event as stressful. A high degree of commitment can help sustain hope and push a person to effective action, while beliefs about personal control in particular situations facilitate effective coping responses. Lastly, the degree to which stressful events are predictable, novel and uncertain will also affect cognitive appraisal and emotional response. This theoretical model has utility because it makes specific predictions regarding the role of psychosocial moderator variables and individual differences in coping with stressful life events.

The concept of stress resistance resources espoused by Antonovsky (1979) has led to an increased focus on the person, environmental and behavioral variables that make an individual less vulnerable to the negative effects of stress. Individual differences with these variables are
believed to account for a significant proportion of the variance in adjustment to stress. There has been increasing attention to the role of social support and the personality construct of hardiness as variables that moderate the impact of stress on psychological and physical outcomes. Both variables have been shown to reduce the risk of psychological distress and physical illness among individuals exposed to a variety of stressors (Cohen & Wills, 1985; LaGreca, 1985).

Social support has consistently shown a significant positive relationship to indices of well being and is negatively related to psychological distress. It is also a major resistance resource for individuals who are coping with the residual effects of psychological trauma (Catherall, 1986; Jones & Barlow, 1990). Personality hardiness has shown similar effects, however, much of the research has focused on its role in decreasing vulnerability to physical strain. The research on hardiness has primarily focused on its hypothesized moderating effect between stress and physical symptoms. Little is known about its effects on symptoms of psychological distress or emotional strain. Additionally, little research to date has investigated its utility in predicting adjustment to more extreme stressors, such as exposure to psychologically traumatic events.

Much of the existing research has investigated these constructs independently rather than focusing on their
interrelationships. As a result, we are lacking understanding of the processes that cause these variables to moderate between stress and symptoms of strain, how they are related to one another and their relative importance in decreasing stress related symptomatology. It is possible that perceived satisfaction with social support may have a positive or negative effect on stress responses depending on other factors such as personality traits (Kobasa & Pucetti, 1983). There may be a reciprocal relationship between hardiness and social support. Hardiness may have a direct influence on an individual's interactions with his or her social environment. Social support, on the other hand, may affect personality.

Clearly, more research is needed to determine under what conditions these constructs protect an individual from the negative effects of stress (i.e., buffer); to understand how they may be interrelated and; to identify confounding variables that may affect perceptions of support or the components of hardiness. For example, recent research suggests that perceived social support may be related to an individual's cognitive models of themselves and others (Sarason, Pierce, Shearin et al., 1991). Given the potential health sustaining effects of social support and hardiness, it would be beneficial to consider how these variables may minimize psychological distress resulting from extreme stressors and enduring occupational stress.
The Psychological Impact of Emergency Medical Work

The medical profession is associated with a high degree of occupational stress. Medical personnel are exposed to a variety of occupational hazards including physical risks, prolonged work schedules, sleep deprivation and the emotionally draining task of caring for critically ill or terminal patients (Patterson, Craven & Schwartz et al., 1985). Particular specialties within the medical profession are associated with higher subjective stress. Emergency medical professionals are at increased risk for occupational stress, burnout and traumatic stress reactions because of the demanding nature of their work (Hammer, Jones, Lyons et al., 1985; Gallery, Whitely, Klonis et al., 1992; Mitchell, 1985). They work in a pressured context "that is overloaded with sensory stimuli (ringing phones, rushing people, beeping monitors), all in a framework of urgency that may change dramatically from one minute to the next" (Phipps, 1988, p. 375). The high patient loads, severity of problems presented by patients, the need for critical decision making in life threatening situations, and the emphasis on rapid disposition take an emotional toll on staff. Recent trends in health-care (e.g., reduced funding, legally mandated expansions of care for patients, and increases in violent crimes) have placed serious strains on the trauma care and emergency medical programs in major cities across the United States (Cross, 1992; Herman, 1991; Brown, Dolan & Painton,
1990). This has significant implications for the provision of care to those in need, also the psychological functioning of the professional working within this overtaxed system.

Mental health professionals have become increasingly aware of the potential negative effects that repeated exposure to highly stressful, extreme events can have on psychological and physical outcomes. Significant psychological sequela has been documented across a range of trauma groups. These include being exposed to combat, rape, violent assault, incest, and natural disaster (Figley, 1985). An important outcome of the renewed interest in research on traumatic stress is the recognition that these reactions can occur in healthy individuals without preexisting psychopathology. The level of exposure to traumatic events is the best predictor of post-traumatic stress disorder (PTSD). Post-traumatic stress disorder is conceptualized by many as a normal human response to an abnormal event. Individuals who are indirectly exposed to the aftermath of disaster, human violence or other types of traumatic events may be at increased risk for short-term symptoms of physical and psychological distress (e.g., anxiety, depression, sleep disturbance, and PTSD symptoms) (North, Smith, McCool & Shea, 1989; Stretch, Vail & Maloney, 1985; Mitchell, 1985; Goldstein, Jammer & Shapiro, 1992).

Psychologists have long recognized that the experience of psychological trauma can have potentially deleterious
effects on an individual's orientation toward the world and themselves. Psychological theories of traumatic stress reactions have increasingly focused on the alteration in cognitive schemata (i.e., beliefs) and primary assumptions about the world, self, and others following trauma exposure (Janoff-Bulman, 1992; McCann & Pearlman, 1990a; Janoff-Bulman & Frieze, 1983). These changes may also occur "vicariously" among helpers who work directly with the survivors of trauma (McCann & Pearlman, 1990b). These individuals, because of their professional role, may be at increased risk for altered "assumptive worlds" because of the indirect exposure to a range of traumatic events.

Unfortunately, there is a dearth of empirical studies investigating this proposed vulnerability. More research is needed to increase understanding of how an individual's primary beliefs are altered because of indirect trauma exposure, as well as, identifying psychosocial variables that may moderate the impact of traumatic exposure among emergency medical professionals.

Over the last decade there has been increased recognition of the impact of exposure to highly stressful, traumatic events on emergency personnel. Emergency medical personnel, particularly paramedics working in large urban settings, are being exposed to the effects of an overwhelming increase in violence in the United States. There has been a consistent rise in the yearly number of
homicides for Chicago over the last several years (Smith, Kosmos & Biek, 1992). Violent assaults cause half the trauma admissions and deaths in Chicago. Chicago Fire Department paramedics have almost doubled the number of responses to violent traumas from 1982 to 1990 (see Figure 1).

Fig. 1. Chicago Fire Department EMS responses to violent traumas for 1982, 1988, and 1990.
This high level of violence in Chicago has continued (Recktenwald & McMahon, 1993). The psychosocial effects of this exposure to trauma and violence can be quite serious. A Chicago Fire Department paramedic recently described his reaction to this situation in the following way:

You go up and you go down. We are normal people trying to stay normal in an abnormal job. How many real crises do people have in a year—one or two? We might have a dozen a shift. You go home and your family asks what happened and you say same old stuff. But you are thinking same old stuff? A guy got his legs blown off! (Herman, 1991, p. 36)

Two veteran surgeons of a large trauma unit in Chicago recently reflected on the escalating number of trauma patients with intentional violent injuries:

It's like open warfare out there...it's just a waste. That may be why there is such a high burnout rate with trauma staff. People just see things getting worse. You feel powerless. (Recktenwald, 1993, p. 13)

The techniques we use now to deal with these wounds are the techniques we learned in Vietnam. We really feel as if we're in a war here. We've had surgeons
come here from foreign countries...to see how you manage gunshot wounds. It's as if we're at war. (Johnson, 1993, p. 12)

The emergency medical systems of most large cities in the United States are confronted with an overwhelming increase in the number of patients who have sustained injuries similar to those seen in military combat zones.

The repeated exposure to extreme events that is associated with the daily duties of emergency medical personnel can have a significant impact on their psychosocial adjustment. Emergency medical work may place these professionals at heightened risk for experiencing measurable changes in their primary assumptions about the world and others. Several recent publications in medical journals have emphasized the need for studies that identify predictors of stress and psychological strain among emergency medical professionals, also interventions that help them cope with the demands of their work (Gallery, Whitely, Klonis et al., 1992; Keller & Koenig, 1989). The use of supportive interventions that integrate knowledge of the cognitive adaptations following trauma exposure and empirically valid moderators of stress may reduce burnout among emergency medical professionals.
Purpose of the Study

The overall purposes of this study were twofold. The first purpose was to assess the effect of repeated exposure to extreme events on emergency medical personnel's beliefs about the world, others and themselves. Recently developed psychological measures (The Traumatic Stress Institute Belief Scale; The World Assumptions Scale) were used to determine whether paramedics experience significant changes with respect to these cognitive variables. The second purpose was to determine whether perceived social support and personality hardiness protect emergency medical personnel from the psychological effects of enduring work related stress. Of particular interest was whether these "resistance resources" moderated the degree of change in primary assumptions in this cohort. The results of this study were expected to contribute to knowledge of traumatic stress by examining the psychological sequela of repeated, indirect exposure to the aftermath of violence and human trauma.

A particularly relevant aspect of this study was the investigation of whether paramedics experience disruptions in primary cognitive schemata (i.e., beliefs about the self, others and the world) which are hypothesized to be affected by exposure to traumatic events. Few published studies have measured the extent and nature of these changes among trauma
groups. No empirical study to date has systematically studied these types of cognitive changes among emergency medical professionals (Miletich, 1990; Davidson & Jackson, 1985). Urban paramedics are at risk for disruption of, at least, particular dimensions of these cognitive constructs due to the nature of their work. We need a better understanding about the nature of these cognitive changes in this group and the identification of factors that make an individual less vulnerable to them. This will increase the efficacy of interventions among groups of individuals who are regularly indirectly exposed to traumatic situations.
CHAPTER II
REVIEW OF THE LITERATURE

Overview

In this chapter a review of the literature related to the theoretical background and primary constructs associated with this study are presented. The first section provides a detailed overview of existing theory and research on traumatic stress. Existing knowledge of the psychological impact of repeated trauma exposure on military and civilian medical personnel are reviewed. It also discusses areas that need further empirical study. The second section focuses on the moderating role of stress resistance resources in reducing the pathogenic effects of stress on physical and emotional well-being. The theory and empirical research on social support and personality hardiness are reviewed. In the final section of the chapter, the research questions for this study are listed.

Traumatic Stress: An Overview of Theory and Research

Traumatic stress is considered a normal and predictable reaction to an extreme event that overwhelms a person's sense of safety and security. This reaction can result from
exposure to a variety of life threatening events (i.e., natural disaster, assault, and combat) and the witnessing of terrible things happening to other people. An individual's reactions to these types of experiences may vary greatly. They can range from acute reactions that are considered normal responses to an abnormal event (Acute Stress Disorder) to more enduring reactions that result in significant impairment in functioning (Post-Traumatic Stress Disorder) (APA, 1994; Keane, Hiley-Young, Furey & Friedman, 1991).

Individuals may differ in the way they cope with the consequences of exposure to trauma and, therefore, can present with different symptom clusters. The emotional, cognitive, biological and psychosocial aspects of functioning are usually affected. These symptoms of distress often slowly dissipate with time as the individual moves through the difficult task of integrating the experience and trying to derive meaning out of it. However, some individuals may experience enduring problems depending on the nature of the trauma, his or her role during the event, the degree of exposure, personal resources and the availability of social supports. One area that needs additional study is whether particular types of traumatic events are associated with the development and maintenance of specific PTSD symptoms (Green, 1991).

Post-traumatic stress disorder is a prolonged stress
response that primarily involves symptoms of reexperiencing, avoidance and hyperarousal (APA, 1994). It is classified as an anxiety disorder. An individual will experience disturbing intrusive thoughts, dreams, or memories of the event and usually will experience heightened distress when exposed to stimuli that are either directly or symbolically associated with the event. The individual actively attempts to avoid stimuli associated with the traumatic event. Slowly these "triggering stimuli" may generalize to include more experiences. Frequently, individuals exposed to severe trauma develop a constriction in their personality and affective responsivity. This is called psychic numbing. Psychic numbing often leads to impairments in relationships, inability to sustain attachments and derive joy or meaning out of life. Lastly, the individual is likely to experience symptoms of autonomic hyperarousal, such as, persistent irritability, poor control of anger, poor concentration, hypervigilance and startle responses. These symptoms of PTSD can be conceptualized in a two dimensional model which includes: 1) repetition of the trauma in images, affective and somatic states and, 2) defensive attempts to deny the trauma including psychogenic amnesia, emotional numbing, suppressive and avoidant behaviors (Brett & Ostroff, 1985).

Someone suffering from PTSD can be incorrectly diagnosed with a generalized anxiety disorder, agoraphobia with panic attacks or major depression. This is because
some symptoms of PTSD overlap with other psychological disorders and that PTSD is frequently accompanied by coexisting psychopathology (e.g., depressive disorders, substance abuse, and personality problems). The task of assessment is further complicated by the reluctance of many clients to discuss their traumatic experiences and their failure to connect these events to their current adjustment problems. This is associated with the recognition that the onset of PTSD may be delayed and it can develop longer than six months after exposure to the traumatic event(s). However, when a client's experiences and psychological functioning are more directly assessed, it may become evident that he or she meets the diagnostic criteria for PTSD. Frequently, individuals will experience sub-syndromal symptoms that may include mild anxiety not present before the traumatic event. This suggests that PTSD is a dimensional disorder with symptoms ranging in severity (March, 1991).

There has been considerable experimental study in cognitive psychology of the way information processing is influenced by cognitive structures called schemata (Gardner, 1985). These mental structures about the world have an important conceptual and organizational role in information processing. New information that is assimilated through existing schemata is usually processed more fully and at a "deeper" level of encoding. An individual can interpret and
derive meaning out of new experiences by associating them with his or her existing knowledge base. Information processing can be significantly disrupted when new information cannot be assimilated based on existing schemata. Recent studies by von Hippel, Jonides, Hilton et al. (1993) suggest that schemata primarily facilitate the encoding and retrieval of the "gist" or general meaning of an event (i.e., conceptual encoding). However, schemata can inhibit the encoding of perceptual details related to an event. Schematic processing may come with costs in the form of distortions of encoded information and inhibited perceptual encoding.

This cognitive model has important implications for understanding the psychological impact of traumatic life events. These types of events are typically outside the range of ordinary experience and will usually be discrepant from preexisting knowledge about the world and self. As a result, the processing of the event will be difficult and the individual will struggle to derive meaning of the experience. This cognitive model emphasizes a reciprocal relationship between internalized representations of the world and experience. Traumatic life events can result in modifications of primary assumptions about the world.

Clinicians have increasingly recognized the impact that exposure to serious life events has on an individual's expectations, assumptions and beliefs about the world,
others and themselves. Some experts emphasize that the changes in a traumatized individual's view of self have the most significant effect on long-term adjustment. Scurfield (1991) believes that a damaged self-concept and esteem are the core experiences of trauma survivors but this consequence of traumatic exposure is often overlooked. Horowitz (1985, 1992) also emphasized the negative impact of trauma on cognitive schemata involving preexisting views of the world. These negative cognitive schemata can have a significant impact on the way an individual processes information and are associated with the development of various forms of psychopathology, particularly depressive and anxiety disorders (Beck, Rush, Shaw, & Emery, 1979). They will influence the individual's perceptions of future experiences. These cognitive structures can have a powerful role in how new information is assimilated due to the inclination for people to actively seek out confirmation of these underlying beliefs and expectancies.

Individuals who experience psychologically traumatic events typically are initially unable to integrate the event into their existing belief system. They must modify their cognitive schemata of the world, others and self to assimilate the experience. These modifications in cognitive structures often are maladaptive, predispose the individual to persistent psychological distress, and can make him or her sensitive to specific stressors (Beck, 1978; Fiala,
Mccann and Pearlman (1990a) described this process of cognitive adaptation:

Schemas can be disrupted by life experiences that are discrepant with them. In the ordinary course of one's life, new information about the self and world is assimilated into one's existing schemas. When a situation occurs that cannot be fit into existing schemas, an accommodation or change in schemas occurs. If the discrepancy between one's existing schemas and life experiences is extreme and perceived as threatening, the event is psychologically shocking. If this discrepancy occurs within a need area that is central to the individual, that event will be experienced as traumatic. (p. 59)

Similarly, Horowitz (1992) has reviewed the central role of schema theory in contemporary models of cognitive processing following traumatic life events. The matching of new information and experiences with inner models of the world is a primary tenet of this theory. The cognitive processing of traumatic life events requires continual revision of schemata to bring these inner models into accord with current reality. Inner schemata must be revised in a way that adapts to these new experiences. The incongruency between existing schemata of the world and new experiences may be minimized if the event is appraised so that it is
consistent with them (i.e., assimilating the experience into existing schemata). Traumatic life events tend to disrupt particular categories of basic assumptions about the world and self. Janoff-Bulman (1989; 1992) emphasized that these types of experiences shatter the "illusion of invulnerability" and consequently challenge primary cognitive schemata regarding safety, predictability and control. Other models of cognitive adaptation to threatening events highlight the importance of cognitive illusion as essential to positive psychological adaptation (Taylor, 1983). This helps maintain a sense of control over events, enhances self-esteem and a sense of mastery. Janoff-Bulman (1989) identified three basic categories of schemas that are affected by psychological trauma:

1) **Benevolence of The World**: The extent to which the world is viewed in a negative manner and the extent which bad events are believed to occur in the world.

2) **Meaningfulness of The World**: The assumptions an individual has regarding the causality of good or bad events which happen. These events may be assumed to occur primarily by chance, based on rules of justice, or are associated with an individual's behavior.

3) **Worthiness of The Self**: The degree to which persons view themselves in a favorable light and feel they are personally deserving of good experiences.

McCann and Pearlman (1990a; see also McCann, Sakheim &
Abrahamson, 1988) have also described the central role of changes in cognitive schemas in their theory of traumatic stress reactions. They focus on the higher-order schemata that are associated with fundamental human needs. These schemata involve the areas of safety, trust, intimacy, esteem and control. Each of these areas of concern is further divided into two loci: schemata related to the self and schemata related to others. Trauma may affect an individual's "general frame of reference" which includes whether he or she will adopt a hopeful or positive orientation toward the future, as well as believing in an internal locus of control.

An important hypothesis of McCann and Pearlman's theory is the assertion that disruptions of prior positive schemata or confirmation of previous negative schemata by specific traumatic events will be directly associated with the development of specific emotional symptoms and behavioral patterns. For example, disruptions of an individual's safety schema can lead to perception of unique vulnerability to future harm, loss or injury. This may be associated with heightened anxiety, fear and arousal, also intrusive thoughts regarding themes of danger. Minor alterations in this type of schema can be adaptive and move the individual to more proactive coping behaviors. If they are severe they can prevent an individual from mobilizing coping resources to protect them from danger. Beliefs associated with the
schema of "other trust" involve generalized expectancies that others can be relied upon and are not seen as malevolent objects. Disruption of this schema can also be adaptive by increasing the use of precautionary behavior. It can result in generalized fear, social withdrawal and avoidant behavior if the disruption is severe. Clearly, disruption of these primary schemata lies on a continuum in terms of their adaptiveness for an individual. Minor changes can result in adaptive benefits but more severe disruptions can result in significant psychosocial "costs" for an individual. Most cognitively oriented clinicians believe maladaptive schemata regarding oneself and others can lead directly or indirectly to psychological distress such as anxiety, depression, loneliness, destructive relationships and psychosomatic disorders (Young & Lindermman, 1992). This theory suggests psychotherapeutic interventions for trauma survivors that focus on the disruption of these primary schemata will be more efficacious in relieving the symptoms of PTSD and foster positive adjustment.

Janoff-Bulman (1989) believes the primary challenge of adapting to traumatic events is the revision of old assumptions in a way that does not promote the total breakdown of the preexisting belief system. The individual must first process the new information and rebuild assumptions by interpreting the traumatic experience
This revision process optimally should help the individual to perceive the world as not entirely threatening or bad. It is important to recognize that there may be significant variability in the nature of changes in schemata among traumatized individuals. These may range from schemas that are generalized and negative, to others that foster a more positive view of the world and allow a recognition of the limitations of these assumptions. Schemata which are particularly important for an individual and reflect central psychological needs are more likely to be disrupted by psychological trauma (McCann & Pearlman, 1990a,b). Social support and the individual's interaction with "the external world" are considered crucial factors associated with coping and eventual recovery from psychological trauma (Janoff-Bulman, 1992).

Emergency medical professionals may be at increased risk for these types of cognitive changes because of the nature of their work (e.g., repeated exposure to human-induced victimizations and the aftermath of disasters or tragedy). The stressors associated with the medical profession, including being "forced to witness, perhaps powerlessly, catastrophic events taking place at close hand in the lives of others" and frequent confrontation with death, can shatter the illusion of invulnerability that many people hold (Davidson & Jackson, 1985, p. 2). This repeated exposure to extreme events can result in enduring changes in
physiology and mental structures, including the perception that life is dangerous, catastrophic and that disaster is never far away. Lifton and Olson (1976) found that the most common response of disaster survivors was an increased sense of personal vulnerability and perceptions of one's environment as threatening. Psychologists are beginning to consider how helpers may experience "vicarious traumatization" as a result of their work with victims (McCann & Pearlman, 1990b). This usually involves a shattering of basic assumptions that can, when extreme, produce feelings of vulnerability, detachment, callousness and loss of faith (Courtois, 1988). These emotional responses are often associated with occupational burnout. This suggests that negative changes in primary assumptions may be positively related to occupational stress and burnout in healthcare professionals.

A complete assessment of psychological distress among emergency medical professionals should investigate the nature of the cognitive changes that can result from traumatic exposure. Research on these cognitive changes has been limited due to the paucity of empirically valid measures. Within the last five years researchers have developed psychometrically sound self-report measures to assess these psychological constructs. These include the Trauma Constellation Identification Scale (Dansky, Roth & Kronenberger, 1990), The World Assumptions Scale (Janoff-
Bulman, 1989) and the Traumatic Stress Institute Belief Scale (McCann & Pearlman, 1990a). Researchers in this area of study have emphasized the need for a more coherent conceptual framework for cognitive assessment and the development of methods to measure complex cognitive phenomena such as schemas (Merluzzi, 1993). The scales mentioned above are promising efforts in the development of psychometrically sound, theory derived, cognitive measures that are accessible for clinical use.

Interventions for PTSD would be more efficacious if they could help a client adapt to the cognitive changes that may accompany traumatic life events. While pharmacotherapy for PTSD can alleviate intrusive recollections and arousal symptoms, it does not affect avoidance symptoms, impacted grief, problems with intimacy, guilt, rage, and moral pain (Friedman, 1991). Pharmacotherapy will also not be an effective treatment for addressing changes in primary cognitive schemas. Better understanding of the cognitive sequela of direct and indirect traumatic exposure, as well as the identification of variables that moderate the degree of disruption in these areas, will add to the development of effective psychotherapeutic interventions for PTSD. It is possible that an individual may exhibit minimal classic symptoms of PTSD, yet experience major disruptions of schemas that negatively affect their adjustment. These individuals may not appear significantly distressed on the
surface, yet will have altered assumptive worlds. Repeated indirect exposure to traumatic events may be more predictive of alterations in one's assumptive world, rather than persistent symptoms of PTSD such as intrusive images, sleep disturbance, hyperarousal and prominent anxiety. An investigation of this hypothesis would help refine conceptualizations of PTSD. There is a need to identify symptoms that are not part of the present diagnostic criteria for this disorder but which occur frequently in particular trauma groups (Green, 1991).

**Traumatic Stress and Combat Medical Personnel**

The renewed interest in the study of traumatic stress reactions over the last 15 years or so has led to an increased recognition of the negative effects of exposure to extreme trauma on caregivers. Much of the recent empirical data on the etiology and development of traumatic stress reactions has come from studies on Vietnam combat veterans. However, medical personnel who served in Vietnam also had a high incidence of postwar adjustment difficulties. It has been more difficult to estimate the extent of their adjustment difficulties due to the initial reluctance to recognize the potential for significant psychological distress among "noncombatants." Many Vietnam medical personnel also initially denied that they were significantly affected by their experiences. This tendency for medical
professionals to minimize or deny the severity of psychological distress is associated with "a high premium within the medical community on appearing to be functional and intact at all times" (Shovar, 1987, p. 153). This is also associated with the fear of losing the respect of colleagues and potentially their job positions due to perceptions by others of being "impaired."

Studies have shown the importance of particular types of stressors in the development of traumatic stress reactions. The magnitude of the stressor experience in terms of its intensity and duration, as well as its qualitative characteristics (e.g., loss of controllability, lack of predictability and exposure to danger), are predictive of subsequent psychological distress. While these stressor properties are common to many trauma experiences, methodologies for characterizing the nature, severity, duration and meaning of extreme stressors are currently limited (Sutker, Uddo-Crane & Allain, 1991; Breslau, 1990). The following extraordinary stressors have been identified as risk factors for the development of traumatic stress reactions: cognitive appraisal of life threat, violent loss, severe physical injury, sudden loss of a loved one, exposure to grotesque death, receipt of intentional harm or injury, witnessing violence and being responsible for the death of another (Green, 1990, 1991). Participation in atrocities and exposure to abusive violence
has been found to increase the risk for PTSD in Vietnam veterans, above the risk associated with the cumulative exposure to combat stressors (Breslau & Davis, 1987). Acute post-traumatic symptoms have also been found among groups of individuals who have witnessed extreme violence toward others (North, Smith, McCool, & Shea, 1989; Pynoos, Fredrick, Nader, et al., 1987). A study of Vietnam combat veterans found that exposure to "grotesque death" was strongly associated with persistent or chronic PTSD (Green, Grace, Lindy & Gleser, 1990).

The types of stressors that may elicit traumatic stress reactions have been broadened to include events that may not involve direct personal assault or threat but instead involve exposure to the aftermath of destruction and violence. The Diagnostic and Statistical Manual of Mental Disorders includes the following type of stressor in the definition of an event that is outside the range of normal human experience:

Seeing another person who has recently been, or is being, seriously injured as the result of an accident or physical violence (APA, 1987, p. 146)

Witnessing an event that involves death, injury or a threat to the physical integrity of another person; unexpectedly witnessing a dead body or body parts,
observing the unnatural death of another person due to violent assault, accident, war or disaster. (APA, 1994, p. 424)

Studies on medical personnel in war zones have confirmed that:

One does not have to be a combatant to be traumatized by war. Simply being in a combat zone with its corresponding elements of danger and exposure to the violent aftermath of combat can be just as traumatic as actual direct participation in firefights (Stretch, Vail, & Maloney, 1985, p. 708)

Clearly, the types of trauma which emergency medical professionals are exposed to, including exposure to personal danger, human suffering and death, could meet this definition of being outside the range of normal human experience. These types of events are repeatedly experienced at a high frequency by most urban emergency medical personnel. The cumulative stress of medical trauma work, if not recognized and dealt with, can result in stress disorder. (Shovar, 1987)

Many Vietnam medical veterans have reported problems with feelings of helplessness, survivor guilt, preoccupation with death, isolation or estrangement and low frustration
tolerance (Dewane, 1984). These problems are associated with their unique roles as caregivers in a combat zone. A sense of helplessness originates from the perceived futility of their efforts to deal with overwhelming numbers of casualties. These individuals may have underlying feelings of inadequacy due to their belief that what they did to help the wounded was not enough.

Large scale studies on the post war adjustment of Vietnam veterans estimate that up to 20% of medical personnel exposed to high war zone stress (e.g., exposure to enemy fire, death, and dying) have PTSD (Baker, Menard & Johns, 1989). Several empirical studies have highlighted the increased risk for residual psychological distress among military medical personnel, particularly those in the nursing corps (Paul, 1985; Norman, 1988; Baker Menard & Johns, 1989; Stretch, Vail & Maloney, 1985; Rogers & Nickolaus, 1987). Combat medical personnel may be at greater risk for developing survivor guilt because of their role as caregivers. Kaufman (1991) provided the only known empirical support for this hypothesized vulnerability. He found that a sample of Vietnam medical personnel reported significantly higher levels of guilt than a group of Vietnam combat veterans. Many of these veterans continue to be vulnerable to emotional disturbance.

The personal impact of repeated exposure to death and human violence can affect an individual's view of the world
and themselves. Initially the individual may become desensitized to this repeated exposure to death (Floren, 1984). Medical personnel use a variety of coping strategies for dealing with the routine encounters with death and dying associated with their jobs. These include educational desensitization, humor, scientific fragmentation, escaping into work and rationalization (Palmer, 1983). A possible long term consequence of repeated, intense exposure to death and extreme destruction is an attraction to death themes with paradoxical death anxiety and psychic numbing (Lifton & Olson, 1976; Parson, 1986).

The Psychological Impact of Disaster and Trauma Exposure on Civilian Emergency Personnel

Much of the empirical research on the effects of trauma exposure among civilian emergency medical personnel has taken place over the last 15 years. This is due to increased awareness among clinicians and emergency program administrators about the risk for stress reactions, as well as the possibility that medical professionals are more willing to participate in psychologically oriented research. Historically, some program administrators assumed only small numbers of emergency workers experienced psychological disruption because of their work. The fact that emergency workers, as a group, tended to minimize their reactions compounded these beliefs. Mitchell (1985) described this
reluctance among emergency workers to participate in psychological research:

Emergency workers themselves have often resisted efforts to research them or to provide special assistance programs for their benefit. They have feared that they would be perceived by their colleagues and the public as mentally weak and unstable if they admitted to feeling anxious or otherwise upset by victims or the daily horrors they witness. In general, emergency workers are quick to suppress their emotions and keep a calm facade in the face of turmoil (Mitchell, p.106).

The outcome of this growing area of research has documented the risk for psychological distress among emergency medical professionals and has led to the development of interventions that can relieve the long term consequences of this stress (Mitchell, 1988). Most of the published studies have focused exclusively on the psychological impact of disasters. This is understandable because these events are usually outside the range of normal human experience and are more likely to elicit at least short-term symptoms of psychological distress (Horowitz, 1985). They are also time limited events in which large numbers of emergency workers are exposed to similar stressors. From a research perspective it would be easier
to causally associate the onset of symptoms with the disaster and it would also increase the likelihood that the participants had to cope with experiences of similar intensity. However, by focussing only on the impact of disasters, it is possible that the incidence of distress among this population is underestimated. The cumulative impact of exposure to extreme events that occur during emergency personnel's daily duties may place increased demands on their coping resources and put them at even greater risk for experiencing traumatic stress related symptomatology.

A review by Dunning and Silva (1980) of studies investigating psychological trauma among rescue workers indicated that severe emotional impairment is not usually a general response. Most helpers experience increased psychological discomfort characterized by increased anxiety, nervousness and somatic complaints. These authors emphasized that little is known about the long-term effect of disaster work on the mental health of rescue workers and they emphasized the need for more research in this area. Other reviews have emphasized that the emotional price among emergency workers is "sometimes quite high, particularly over repeated experiences ... in cases where the task was particularly gruesome, such as working with mutilated bodies or body parts" (Green, 1985, p. 3; Jones, 1985).

There are several other substantive areas where
empirical research is lacking. These include the assessment of the extent and severity of long-term psychosocial problems among emergency workers, as well as the investigation of person variables that help explain why some people are more resilient than others to these stressors. These person variables include the level of exposure to trauma, previous experiences, age, level of experience and coping strategies. Social support, personality hardiness and the extent of emergency preparedness have been implicated as disaster-related stress moderators among medical professionals (Fain & Schreier, 1989). Green (1985, p. 12) emphasized that "variability in these factors is likely in the emergency worker population" and called for more research on these types of moderating variables. Research has shown the positive moderating effects of social support in the general population and other trauma groups (Catherall, 1987; Galloucis & Kaufman, 1988; Joseph, Yule, Williams & Andrews, 1993). Its effect on emergency workers needs to be studied more systematically.

Figley (1985, p. 85) reported that "there is no question that emergency workers who are exposed to extreme situations on a regular basis are traumatized by these experiences from time to time." He emphasized the need for more studies investigating the incidence of traumatic stress reactions among emergency workers. It is likely that this group would have higher incidence rates of PTSD than those
found in the general population (i.e., one to two percent) (Helzer, Robins & McEvoy, 1987). Additionally, a significant percentage would also be expected to experience some PTSD symptoms yet fail to meet the full diagnostic criteria for this disorder. This type of research effort would help counter the historically minimal attention and awareness to the stress symptoms of healthcare professionals (Fain & Schreier, 1989).

The direct involvement in a disaster and intensity of traumatic exposure are primary variables for identifying groups at risk for adjustment difficulties (Wright, Ursano, Bartone & Ingraham, 1990). Psychological symptoms are expected to develop in proportion to the intensity of direct involvement and contact with the dead and injured. This is consistent with studies of combat veterans that have found that the degree of combat exposure (i.e., exposure to life threatening and traumatic combat stressors) is the single best predictor of the presence and intensity of PTSD symptoms (Foy, Carrol & Donahue, 1987). Individual differences in emergency workers stress responses can also related to the degree they identify with the victim and victim characteristics (Martin, McKean & Veltkamp, 1986). For example, paramedics often report higher levels of distress when working with very young patients or with patients who remind them of significant others.

A partial review of studies investigating the
psychological effects of disaster work suggests that most emergency personnel experience short-term symptoms of distress following a disaster (see Appendix A). There was wide variation in the extent of reported problems among participants, with 24% to 88% of respondents acknowledging some degree of psychological distress. These variations may be related to differences in the characteristics of subject samples, the nature of the disaster, the quality of the assessment methods and the time of assessment. Some studies just focused on global changes in mood, while others included a detailed inquiry about PTSD symptoms. No study assessed the extent of changes in cognitive schemata, although Miles, Demi and Mostyn-Aker (1984) reported that 65% of the respondents in their study felt their "life was changed" because of their experiences. The subjects included in these studies are heterogeneous. They may include police, nurses, fire personnel, rescue worker, paramedics and civilian support personnel. Few studies have focused exclusively on emergency medical personnel. Therefore, the extent to which these findings generalize to large groups of emergency medical professionals is unknown.

Wilkinson (1983) did find that personnel who had close contact with victims experienced higher levels of guilt (i.e., wanting to have done more to relieve pain, suffering or death). However, they reported fewer startle responses, avoidant behaviors and sleep disturbance than those who were
direct witnesses of the disaster event. Most individuals reported repeated recollections of the event, but fewer had dreams related to it (50%). While many individuals report some symptoms associated with PTSD following a disaster, a much smaller percentage experience the full range of symptoms necessary to meet the diagnostic criteria for PTSD. Durham, McCammon and Allison (1985) reported 80% of the emergency medical and police personnel in their sample experienced at least one symptom of PTSD and 20% of those at the disaster site had symptom constellations matching PTSD. Similarly, Martin, McKeon, Veltkamp et al., (1986) reported that 26% of a convenience sample of police officers who worked closely with victims met DSM-III-R criteria for PTSD.

Most of the published studies do not provide longitudinal assessment, so it is difficult to estimate what percentage of individuals will experience persistent residual stress reactions. There is a consensus regarding the extent of short-term psychological distress associated with disaster work "though debate continues over the existence of longer-term effects" (Shepherd & Hodgkinson, 1990, p. 30). Existing data suggests that a sizeable minority of individuals may experience long-term effects. Studies with disaster survivors show that symptoms of distress usually are abated 18 months after the event. However, with severe stressors, symptoms can persist for over three years (Joseph, Yule, Williams & Andrews, 1993).
A primary hypothesis of this study is that these long-term effects may involve measurable changes in primary assumptions about the world.

There is a limited number of empirical studies focusing on stress reactions among paramedics. Surveys have documented high levels of work-related stress among paramedics and emergency medical technicians (EMT's) (Herbison, Rando, Plante & Mitchell, 1984; Miletich, 1990). This stress can lead to occupational burnout and disruptions in relationships. Two types of work related stressors contribute to this heightened vulnerability for burnout among this group (Mitchell, 1984). These include administrative (e.g., long hours, lack of administrative support, negative relationships with hospital staff) and clinical (e.g., physical danger, chronic exposure to human tragedy and pressure to act correctly in uncertain situations) factors. Paramedics are exposed to threatening and traumatic stressors with frequently less administrative support than other health professionals. This is one reason this group report considerably higher levels of burnout than other health professionals (Grisby & McKnew, 1988). Paramedics in a large Midwestern city were found to exhibit higher levels of organizational stress, job dissatisfaction and negative patient attitudes than general hospital employees (Hammer, Matthews, Lyons & Johnson, 1986). These authors concluded that because these professionals tend not
to report somatic distress or physiological markers of stress, supervisors may mistakenly believe that paramedics are not stressed. A follow-up study found that responsibilities that involve direct care of patients and the coexistence of significant life changes are associated with higher subjective stress (Cydulka, Lyons, Moy, et al., 1989). Additionally, degree of experience, perceived physical threat, length of service, negative relationships with co-workers and an internal locus of control are associated with perceived stress levels (James, 1988; Grigsby & McKnew, 1988).

There is a lack of knowledge regarding the psychological impact of non-disaster related events for paramedics and EMT's. Genest et al. (1990) emphasized that:

Data suggest that emergency personnel experience substantial symptomatology as a result of rescue efforts. There is, however, little indication of the extent or depth of the problem. Existing reports mostly concern extraordinary disasters or crises... writers in the area expect that traumas of smaller magnitude...would lead to similar problems but few data are available. (p. 307)

These authors reported that volunteer ambulance attendants involved in an unsuccessful cardiopulmonary resuscitation experienced a "persistent psychological aftermath" involving
affective and intrusive symptoms. This study suggests that more attention should be paid to the psychological impact of routine stressors which paramedics experience during their daily duties.

Summary

Recently empirical studies have investigated the psychological impact of emergency medical work. Studies have highlighted the increased risk for residual psychological distress among paramedics. Most published studies have focused exclusively on the psychological impact of disasters. A fewer number of empirical studies have focussed on the psychological functioning of EMT's and paramedics, despite their heightened vulnerability for burnout. There is a lack of knowledge about the psychological impact of non-disaster related stressors that paramedics experience during their daily duties. The cumulative effects of this exposure place serious demands on coping resources and may increase the risk for more enduring stress-related symptomatology.

Recent reviews of the literature have emphasized the need for systematic study of the following areas:

1) The role of personality factors that explain why some people are more resilient to these stressors.

2) Coping strategies.
3) The moderating effects of social support among emergency workers.

4) The incidence of traumatic stress symptoms.

5) The nature of changes in primary cognitive schemata resulting from the continuous stressors associated with emergency medical work.

**Stress Resistance Resources**

A large body of research has documented the potentially pathogenic effects of a variety of stressful life events including the number of negative life events experienced, "daily hassles", the onset of physical illness or injury, unexpected losses and the occurrence of psychological trauma (Holmes & Rahe, 1967; Sarason, Johnson & Siegal, 1978; Lilliston, 1985; Van der Kolk, 1987; Reich, Zautra & Guarnacia, 1989). Psychological research has increasingly focused on the identification of moderator variables which influence an individual's responses to stressful events. These factors are believed to make an individual less vulnerable or more resilient to the effects of stressful life events. This has been consistently supported by empirical data that indicates only ten to fifteen percent of the outcome variance is accounted for in studies on the relationship between negative life events and self reported symptoms of physical or psychological strain (Smith, Smoll & Ptacek, 1990). The amount of variance accounted for in
studies of physical well being is much smaller (e.g., 1% to 5%) when self-report bias is reduced by the use of objective measures of health status (Schroeder & Costa, 1984).

Theoretical models of adaptation to traumatic events emphasize the interactive effects of the following factors as key determinants of post-traumatic adjustment: 1) the nature of the trauma, 2) intrapersonal factors (e.g., pre-trauma personality, coping behaviors, defensive style, and the subjective meaning of the experience, commitments and a preventive health orientation) and, 3) the recovery environment (e.g., social support and the presence of additional stressors) (Green, Wilson & Lindy, 1985; Wilson, Smith & Johnson, 1985; Castelnuovo-Tedesco, 1981). Antonovsky (1979) referred to these variables as stress resistance resources.

Methodological Issues in Stress Resiliency Research
Several models attempt to explain the role stress resistance resources play in the onset, severity and progression of physical or emotional strain (Cohen, 1988). The most commonly tested models are those which are stress centered. The stress buffering model predicts that a particular resistance resource (e.g., social support) is related to well being primarily for persons who are under stress. These are expected to protect (i.e., buffer) an individual from the negative effects of stressful events but
will have little relationship to psychological adjustment under low levels of stress. This is demonstrated statistically by a significant interaction between measures of stress and the particular resistance resource under study. Multiple regression is considered a preferred multivariate method for testing main and interactive effects when studying moderators (Finney, Mitchell, Cronkite, & Moos, 1984). This often has significant advantages over other methods of analysis such as the increased power associated with the use of continuous data rather than a dichotomized dependent variable.

A main or direct effect model predicts that a resistance resource has a beneficial effect irrespective of whether a person is under stress. According to this model a stress resistance resource would demonstrate an independent effect on either physical or emotional strain. This is statistically demonstrated by a significant main effect for the resistance resource with no interaction (stress X resistance resource) (Cohen, 1988). A significant direct effect indicates that a lack of a particular resistance resource (e.g., social support) is, in itself, a source of stress that may result in negative emotional states. This can directly increase one's vulnerability to the effects of stress by increasing the adaptive demands placed on an individual.
The buffering model of stress resistance resources is an example of a moderator theory in psychology. A moderator is a third variable which has a significant influence on the relationship between a predictor and a criterion (Zedeck, 1971). It may affect either the direction or strength of the relationship between a predictor variable and a criterion. Moderators can be identified by searching for theoretically relevant variables whose interpretation depends upon other variables or by identifying subgroups that have significantly different correlations between a predictor and criterion (Ghiselli, Campbell, & Zedeck, 1981). A moderator effect is demonstrated by a statistically significant interaction effect between a predictor and moderator on a criterion (Baron & Kenny, 1986). The moderator must interact with the predictor variable so as to significantly influence its association with the criterion variable. The method of analysis used to test for a moderator effect is based on whether the moderator and predictor variables are dichotomized (e.g., ANOVA) or continuous variables (e.g., multiple regression).

Although early empirical researchers attempted to determine the moderating effects of single resistance resources in isolation, more recent studies have been designed to examine the combined effects of these variables in moderating the stress-strain relationship. Accordingly, the individual and interactive effects of several resistance
resources are studied simultaneously. This approach will help develop useful theory based preventive and remedial interventions for stress. Brown and Heath (1984) reviewed the existing literature on coping with critical life events and emphasized that:

Beyond simply describing a host of environmental, social, and personal factors that might influence an individual's reaction to a potentially traumatic event, most current theories do not offer predictions that specify how the described modalities interact nor do they provide predictions concerning how these factors and their interactions produce specific affective, cognitive and behavioral reactions. (p. 546)

They emphasized the need to move beyond non-theoretical correlational research to an investigation of the mechanisms by which various resistance resources (e.g., social support) operate.

The study of multiple intervening variables in psychological research will lead to increased understanding of complex moderator patterns. Failure to consider the interactive effects of these variables may produce confounding results or failure to demonstrate buffering effects because of inadequate control. For example, several studies have indicated that the moderating effects of social support can vary as a function of other individual
difference variables that relate to coping (e.g., degree of masculinity, locus of control and hardiness) (Smith, Smoll, & Ptacek, 1990).

**Social Support**

Social support is one of the most extensively studied resistance resources. There is an abundance of empirical evidence on the beneficial effects of social support on physical and emotional well-being (Cohen & Syme, 1985; Kessler & McLeod, 1985; Broadhead, Kaplan, James et al., 1983). The extent to which social support is available and perceived as satisfactory also has an important influence on the etiology and severity of PTSD (Jones & Barlow, 1990; Wojcik, 1987; Payne, 1985; Wolf, 1984). The importance of supportive social relationships in attenuating physical and psychological strain, as well as occupational stress, has been demonstrated in studies with highly stressed occupational groups (Cooper, 1986; Ogus, 1990; Singh, 1990). Despite the accumulation of studies which indicate that social support is associated with psychological and physical outcomes, a number of substantive questions remain regarding the role of social support as an intervening variable. These include: 1) whether social support buffers the negative effects of stress, 2) the identification of the mechanisms through which social support influences well being and, 3) how social support may be influenced by other psychological variables.
The buffering model stipulates that social support operates as a moderator of stress-adjustment relationships rather than as an independent correlate of symptomatic behavior (Brown, Brady, Lent, et al., 1987). There have been inconsistent results whether social support "buffers" individuals from the negative effects of stress. A variety of methodological problems common in the social support literature may account for some of this variation. These include the use of a diverse range of social support measures (e.g., functional vs structural measures; those based on perceived availability versus perceived satisfaction) and inadequate operationalization of the construct (House & Kan, 1985). Additionally, several other factors may influence the effects of social support including the source (i.e., who provides it), when it is provided, how long it is provided, the type of support provided and whether there is an appropriate match between the type of support offered and the needs elicited by the stressor (Cohen & Syme, 1985). A recent study has found partial support for this matching theory of social support (Braboy-Jackson, 1992).

Previous reviews of the social support literature have documented inconclusive support for a buffering effect (Leavy, 1983; Broadhead, Kaplan, James et al., 1983). Alloway and Bebbington (1987, p. 91) reviewed empirical studies on the buffer theory and concluded that the
inconsistent evidence for a buffering role of social support reflects methodological differences between studies and that "buffering effects are not of dramatic proportions". However, other reviews have concluded that when methodologically weak studies are excluded from analysis there is strong evidence for a buffering effect of social support (Kessler & McLeod, 1985). Cohen and Wills (1985) determined that there is support for both a direct effect and buffering model of support. Buffering effects are likely when a social support measure assesses resources that are responsive to the needs elicited by particular stressors. They emphasized the need for a match between the needs elicited by a stressor and the social resources perceived to be available (see also Hobfoll, Nadler & Lieberman, 1986; Cutrona, 1990). Support needs may vary by the type of stressor experienced. Therefore, buffering effects may be obscured when either structural or global functional measures of social support are used, since these may not assess the different support functions provided.

Buffering effects may also be more likely if there is adequate control for acute and chronic stressors, as well as the magnitude of stress (Kessler & McLeod, 1985). Chronic stressors have been hypothesized to be more affected by the moderating effects of social support. However, contrary to this hypothesis, social support may not moderate the effects of chronic stress associated with certain occupational
groups (e.g., air traffic controllers) (Cobb, 1976). Some types of chronic stress (e.g., household overcrowding) can limit the buffering effects of support by eventually eroding it (Lepore, Evans, & Schneider, 1991). It is also possible that social support may exert a differential buffering effect based on the type of outcome measure studied. For example, social support may more directly influence the impact that psychological trauma has on one's beliefs about the world, others and self rather than symptoms of PTSD involving reexperiencing (e.g., intrusive imagery). This view is consistent with the proposal by Dean and Lin (1977) that social support will differentially buffer different clusters of stressful life events. Social support may also differentially buffer only particular types of stress responses.

Most researchers have emphasized the need to investigate the mechanisms through which social support operate. Unfortunately, less research and theory has been directed toward this goal. The identification of reliable mediators of social support will help refine existing theories and further assist in developing effective interventions for stress. Recent research efforts have begun to address this shortcoming in the literature by embedding the construct of social support into a body of theory which suggests its mechanisms of action and antecedent processes (Brown, Brady, Lent, et al., 1987;
Brown, Alpert, Lent, et al., 1988). Cohen (1988) has also presented models which describe the influence of social support on the etiology of physical disease. Social support is hypothesized to influence well being by affecting the appraisal of stressors and altering maladaptive behaviors, coping strategies, negative affect, as well as increasing self-esteem, personal control and mastery (Wills, 1985). Cohen (1988) believes that "the positive influence of social integration on health is mediated both through social influences improving health practices and through psychological states such as control and self esteem."

Given the multidimensional nature of social support, it is likely that its influence on physical or psychological outcomes is associated with the operation of multiple mediating factors.

An important outcome of the growing research on social support has been the recognition that personality and cognitive factors might significantly affect the perceived availability, satisfaction or utilization of social support. For example, personality traits such as social anxiety and social competence may affect either the need for or mobilization of social support (Cohen & Syme, 1985). The perceived availability and satisfaction with social support has been conceptualized as a relatively stable individual difference variable that is related to social skills development and social competence (Sarason, Sarason &
Shearin, 1986). Horowitz (1991) has recently discussed how particular "person schemas" can indirectly negatively affect social support by promoting maladaptive interpersonal patterns. A study by Sandler and Lakey (1982; see also Lefcourt, Martin, and Saleh, 1984) found that locus of control beliefs had a significantly moderating effect on the receipt and impact of social support. Although individuals with an external locus of control reported receiving more support, stress buffering effects only occurred for those with an internal locus of control. There are inconsistencies in the literature regarding how social support and hardiness relate to symptoms of physical and psychological strain. Some studies have found that social support and hardiness together do not have a significant effect on adjustment (Pagana, 1990; Johnson, 1989). However the opposite results have also been reported (Pierce & Molloy, 1990; Bartone, Ursano, Wright, et al., 1989). It is possible that hardiness primarily exerts an influence on the relationship between stress and physical health while social support affects physical and emotional well being (Wells, 1987).

Kobasa and Puccetti (1983) found that among a group of male executives perceived family support had a negative effect on health outcome for individuals with low hardiness. Ganellan and Blaney (1984) found that two components of hardiness (i.e., commitment and challenge) are strongly
associated with social support. One study with a sample of paramedics found that hardiness and social support were significantly correlated but only hardiness had a significant effect on anxiety symptoms (Wood, 1990).

There continues to be a lack of understanding regarding the causal relationship between social support and hardiness. Social support may increase hardiness by bolstering self esteem and a sense of belonging; on the other hand, hardiness may increase social support by increasing social involvement and fostering positive social relationships (Ganellan & Blaney, 1984). The beneficial effects of several other personality constructs (e.g., dispositional optimism, perceived control and self esteem) have been found to be mediated by the use of effective coping strategies, including a greater tendency to seek out social support (Aspinwall & Taylor, 1992). This provides indirect support for the hypothesis that hardiness may increase social support by fostering social involvement and positive attachments with others.

**Personality Hardiness**

Personality factors have consistently been considered important individual difference variables in the stress process. A number of personality variables, including hardiness, locus of control, Type A traits, and neuroticism, have been linked to health behaviors and stress-related outcomes (Cooper & Payne, 1991). The construct of
personality hardiness has been espoused as a personality style crucial for stress resistance (Gentry & Oullette-Kobasa, 1984). Hardiness is considered an optimistic orientation which helps individuals "rise to the challenges of their environment and turn stressful life events into possibilities or opportunities for growth" (Kobasa, 1982, p. 6). This is presumed to lessen the negative impact of stressful life events by influencing cognitive appraisal (i.e., interpreting events as not so undesirable or overwhelming) and coping (i.e., the utilization of activities which lead to effective resolution of problems and which involve problem-focused or transformational coping). Hardy individuals tend to appraise stressors as less threatening and consequently may have less adverse affective responses (Wiebe, 1991; Allred & Smith, 1989). This is consistent with the theoretical model of stress developed by Lazarus (1966) which emphasized the importance of cognitive appraisal. Commitments and existential beliefs are considered one of the most important factors affecting the appraisal of an event as stressful (Lazarus & Folkman, 1984). These also represent important components of the construct of hardiness. However, there is a lack of consistent evidence that the adaptive cognitions associated with hardiness result in lower levels of physiological arousal in response to threat (Allred & Smith, 1989). It is possible that, at least in some contexts, the
characteristics associated with hardiness may actually interfere with long-term adjustment. For example, hardy individuals may be poorly disposed to cope with the stress of illness because of a tendency to deny health problems and ignore the activating effects of anxiety (Blair, 1989). Hardy individuals may be less willing to report or acknowledge their illness because it conflicts with their self-image of being in control and exhibiting vitality. Hardiness is associated with other personality dispositions (e.g., neuroticism) that influence health reports but not actual illness (Allred & Smith, 1989).

Hardiness is significantly correlated with other personality dispositions that are associated with mental health and susceptibility to illness. Specific dimensions of hardiness have been found to have moderate correlations with measures of optimism, dimensions of the healthy personality assessed by the Personality Orientation Inventory, extraversion-introversion, and neuroticism (Scheier & Carver, 1985; Campbell, Amerikaner, Swank, et al., 1989; Parks & Rendall, 1988; Hills & Norvell, 1991). Although individual subscales of the hardiness scale are significantly correlated with a measure of dispositional optimism (e.g., internal locus of control: \( r = .34 \); alienation: \( r = -.26 \) to \( -.36 \)), these two constructs represent conceptually distinct traits and are, to some extent, empirically separable (Scheier & Carver, 1985;
These findings provide support for the convergent validity of hardiness as a disposition which reflects healthy aspects of personality. They suggest that hardiness is associated with personal characteristics of stability, flexibility, sociability, an active orientation toward life, enjoyment of challenge and a proclivity to optimistically appraise stressors (Parkes & Rendall, 1988; Banks & Gannon, 1988). The hardiness scale correlates moderately with measures of general maladjustment \( r = -0.25 \) to \(-0.40\) but is considered sufficiently empirically distinct so as not to be just another measure of maladjustment (Funk & Houston, 1987).

There are three hypothesized dimensions of hardiness (Kobasa, 1982). These include:

1) **Commitment**: A sense of purpose and meaningfulness with oneself and one's activities. This is associated with active involvement in a range of interests and activities.

2) **Challenge**: The perception that stressful life events are an expected part of life and that these experiences provide an opportunity for development.

3) **Control**: The belief that one can influence life events rather than feeling helpless.

Most of the empirical research on hardiness has studied it as a "latent variable" which is presumed to be indirectly
manifested by the personality traits of control, challenge and commitment. Hardiness has been measured using different scales, all of which are presumed to assess these dimensions. Kobasa (1979) initially measured hardiness by using several subscales from other tests (e.g., the locus of control scale; the Alienation Test) that were thought to assess relevant dimensions of hardiness and which discriminated executives who were resilient to stress. Each of these subscales were analyzed in terms of how well they discriminated between resilient and non-resilient groups.

The original Hardiness Scale has been criticized because of the inclusion of negative indices to assess the components of this construct. Several alternate measures have subsequently been developed which attempt to address this shortcoming, as well as concerns regarding the substantial correlations between the commitment and control subscales (Horan, 1991; Dermatis, 1990). O'Connor (1989) developed a hardiness measure with item content related to the personal and professional lives of nurses. However, this scale did not have adequate psychometric characteristics to be useful for research. While the measure by Horan (1991) demonstrated adequate psychometric characteristics, additional cross-validation and validity studies on this measure are needed.

Most of the published studies have focused on the predictive validity of the composite index of hardiness
(i.e., total score), with minimal information provided about the role played by each component (Carver, 1989). Critical reviews have questioned whether hardiness is a unitary construct and have emphasized the need to avoid solely using a composite index of hardiness (Hull, VanTreuren, & Virnelli, 1987; Funk & Houston, 1987). The use of only a composite index may obscure the independent effects of the components of hardiness. Commitment and control have been shown to primarily account for the variance in outcome measures of physical strain but the challenge subscale does not significantly contribute to health predictions. The primary importance of commitment and control has been replicated in several other studies (Dermatis, 1990; Topf, 1989; Hull, VanTreuren, & Propsom, 1988). Some researchers believe that theoretical understanding may be increased by conducting separate analysis of the dimensions of hardiness (Carver, 1989). This will help determine what aspects of the composite index are responsible for the observed effects in ameliorating or buffering the negative effects of stress (Scheier & Carver, 1987).

A growing body of research, involving both retrospective and prospective designs, supports the role of hardiness as an active resistance resource (Gentry & Ouellette-Kobasa, 1984; Kobasa, 1979; Kobasa, Maddi, & Kahn, 1982; Wiebe & Mc Callum, 1986). Despite these positive findings there is still uncertainty whether hardiness
actually buffers the negative effects of stress. The lack of consistent support for a buffering model of hardiness is similar to what has been reported in the social support literature. Some studies have found evidence of a stress-moderator effect, while others have found support for only main effects or no association at all with measures of well-being and burnout (Bartone, Ursano, Wright, et al., 1989; Westman, 1990; Banks & Gannon, 1988; Hills & Norvell, 1991; Roth, Wiebe, Fillingim, et al., 1989; Embry, 1992; Dermatis, 1990; Clarke, 1992; Heeren, 1992; McCranie, Lambert & Lambert, 1987; Funk & Houston, 1987; Hull, Vantreuren & Virnelli, 1987; Topf, 1989). Most of the published studies have focused on the moderating effects of hardiness on health and physical outcomes. The studies which support a buffering model have utilized indices of health and physical strain as the criterion. However, there is some evidence that hardiness may be significantly related to the development of psychological distress. For example, Funk & Houston (1987) found hardiness to be more related to later depression but not physical illness.

There is a lack of empirical research which addresses whether the construct of hardiness is relevant to the study of traumatic stress. Although existing research strongly supports the moderating role of social support in traumatic stress, few studies have studied the moderating role of hardiness following exposure to traumatic events. A study
by Hilgers (1988) did find that hardiness level was the strongest predictor of traumatic stress symptoms in a sample of rape victims. The majority of studies have investigated the effects of hardiness on less severe stressors, such as, life change events or enduring occupational stressors. It is not known whether personality hardiness will ameliorate or moderate the pathogenic effects of exposure to psychologically traumatic experiences.

Research Questions

In light of the research findings reported above related to the traumatic stress literature and the literature on stress among emergency medical professionals, the following research questions were crafted to serve as the basis for the investigation to be described in what follows:

1) What are the possible psychological effects of repeated indirect exposure to traumatic stressors?

2) To what extent do paramedics experience changes in primary cognitive schemata, as measured by the Traumatic Stress Institute Belief Scale and the World Assumptions Scale?

3) What roles do social support and hardiness have in moderating the relationship between stress and changes in primary cognitive schemata?

4) What are the relative contributions of resistance resources (e.g., social support, hardiness), demographic
and occupational variables (e.g., average number of runs per shift, degree of exposure to abusive violence, stressful life events and degree of exposure to traumatic stressors) in predicting psychological adjustment.
The participants for this study consisted of 253 certified emergency medical technician-paramedics (EMT-P) residing in Cook County and several metropolitan areas in Illinois (e.g., Springfield, Aurora, Rockford, Joliet, Decatur and Peoria). This area includes several regions of the Illinois Division of Emergency Medical Services. It includes one of the largest urban emergency medical networks in the United States (i.e., the city of Chicago).

The subjects were systematically randomly selected from a published listing of all state certified EMT's living in the above mentioned locations. The following information was provided by the Illinois Department of Public Health-Division of Emergency Medical Services for each certified EMT: name; address; county; and level of certification (e.g., basic, intermediary, advanced life support, and paramedic).

Paramedics were selected as participants because they are exposed to a range of emergency medical situations, are likely to experience heightened levels of occupational stress, and are expected to have a higher risk for exposure
to traumatic events. Previous studies have highlighted a high risk for stress related strain among this group of emergency medical professionals. Paramedics are typically responsible for the pre-hospital care of patients. They usually work "in the field" providing emergency medical assessment, initial stabilization, treatment, and transport of patients outside of a hospital setting. Paramedics are believed to have a greater degree of indirect exposure to the aftermath of violence, trauma, and extreme situations than emergency medical professionals working primarily in a hospital emergency department (ED). It should be noted that there has been an alarming increase in the number of trauma cases being treated in most urban emergency departments. Many of these injuries are the result of violence, abuse and drug related problems. There has also been a significant increase in the number of violent episodes in most urban emergency departments (Kinkle, 1993). Hospital ED staff also are occasionally mobilized to disaster sites, particularly if they work in level 1 trauma centers. However, ED staff usually experience these situations within a hospital setting that has more environmental controls and supports. While ED staff are exposed to the aftermath of violence and trauma on a daily basis, this may be somewhat more restricted than what paramedics are regularly exposed to. Paramedics are exposed directly to disaster sites, the scenes of accidents, violence or the abuse of others, and
the risk of personal threat with greater frequency.

A sample of 925 paramedics was systematically randomly selected from the total number of certified paramedics living in Cook County (N = approximately 3,000) and several metropolitan areas in Illinois (N = approximately 300). The following breakdown lists the number of subjects selected from each geographic location:

<table>
<thead>
<tr>
<th>Location</th>
<th>Population (Estimated)</th>
<th>Number Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicago</td>
<td>911</td>
<td>375</td>
</tr>
<tr>
<td>Suburban Cook County</td>
<td>1850</td>
<td>375</td>
</tr>
<tr>
<td>Rockford</td>
<td>70</td>
<td>46</td>
</tr>
<tr>
<td>Joliet</td>
<td>70</td>
<td>47</td>
</tr>
<tr>
<td>Aurora</td>
<td>44</td>
<td>30</td>
</tr>
<tr>
<td>Springfield</td>
<td>41</td>
<td>26</td>
</tr>
<tr>
<td>Decatur</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>Peoria</td>
<td>16</td>
<td>10</td>
</tr>
</tbody>
</table>

The sample size estimate for the first mailing (n = 250) was adjusted upward by 100% (n = 500) to compensate for a relatively high expected refusal rate given the nature of the study, characteristics of the population (healthcare professionals), and the use of mail administered data. The first mailing was sent to subjects living in Cook County. The second mailing included 425 paramedics living in Cook County and the several metropolitan areas noted above. A
A sample of at least 200 subjects was determined to be of sufficient size for adequate statistical power (Cohen, 1992).

A total of 835 questionnaires were delivered to participants. Two hundred and sixty three questionnaires were returned. Ten returned questionnaires were excluded from analysis due to either incomplete responding (n = 6) or because the respondent had not worked as an EMT-P within the six months preceding completion of the questionnaire (n = 4). This was done to insure that comparative analyses would be restricted to individuals recently exposed to the stressors associated with emergency medical services. There was a 30.30 % usable return rate (N = 253).

Characteristics of the Sample

The demographic data with frequencies and percentages for the total sample are presented in Table 1.

| TABLE 1 |
| DEMOGRAPHIC DATA FOR THE TOTAL SAMPLE (N=253) |

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value Label</th>
<th>N</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>208</td>
<td>82.2</td>
<td>82.5</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>44</td>
<td>17.4</td>
<td>17.5</td>
</tr>
<tr>
<td>Race</td>
<td>African American</td>
<td>4</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>Caucasian</td>
<td>236</td>
<td>93.3</td>
<td>94.4</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>6</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>2</td>
<td>0.8</td>
<td>0.8</td>
</tr>
</tbody>
</table>
Table 1 Continued.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value Label</th>
<th>N</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td>Other</td>
<td>2</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>3</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td>Married</td>
<td>117</td>
<td>70</td>
<td>70.5</td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>39</td>
<td>15.4</td>
<td>15.5</td>
</tr>
<tr>
<td></td>
<td>Living with partner</td>
<td>14</td>
<td>5.5</td>
<td>5.6</td>
</tr>
<tr>
<td></td>
<td>Separated</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>16</td>
<td>6.3</td>
<td>6.4</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>2</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Combat Veteran</td>
<td>Yes</td>
<td>13</td>
<td>5.1</td>
<td>5.2</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>237</td>
<td>93.7</td>
<td>94.8</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>3</td>
<td>1.2</td>
<td></td>
</tr>
</tbody>
</table>

The mean age of participants was 34.7 years and the range was from 21 to 57. Two hundred and eight of the participants were male (82.5%) and 44 (17.5%) were female. Two hundred and thirty six (94.4%) of the participants were Caucasian and only twelve (4.8%) were either African American, Asian American or Hispanic. The majority of participants were married (177, 70.5%). Twenty one (8.4%) were either separated or divorced. Thirteen (5.2%) reported having prior military combat experience or having served as support personnel in a military combat zone.

Work Characteristics of The Total Sample

Frequency and percentage data for work related
variables are presented in Table 2.

**TABLE 2**

WORK CHARACTERISTICS OF THE TOTAL SAMPLE (N=253)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value Label</th>
<th>N</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Status</td>
<td>Full-Time</td>
<td>226</td>
<td>89.3</td>
<td>91.1</td>
</tr>
<tr>
<td></td>
<td>Part-Time</td>
<td>22</td>
<td>8.7</td>
<td>8.9</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>5</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Primary Work Responsibilities</td>
<td>Direct Care</td>
<td>218</td>
<td>86.2</td>
<td>87.6</td>
</tr>
<tr>
<td></td>
<td>Direct Care In a Hospital</td>
<td>2</td>
<td>.8</td>
<td>.8</td>
</tr>
<tr>
<td></td>
<td>Supervisory-Regular Patient Contact</td>
<td>24</td>
<td>9.5</td>
<td>9.6</td>
</tr>
<tr>
<td></td>
<td>Supervisory-Without Patient Contact</td>
<td>5</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Missing</td>
<td>4</td>
<td>1.6</td>
<td></td>
</tr>
</tbody>
</table>

All of the participants included in the analyses had worked as an EMT-P within the preceding six months of completing the questionnaire. Only two participants were not working as an EMT-P at the time of completing the questionnaire but had last worked in a professional capacity within the preceding six months (5 and 2 months). Most of the participants (226, 89.3%) were employed full-time as an EMT-P and were responsible for the direct care of patients "in the field" (218, 86.2%). Two participants (.8%) provided direct care to patients primarily in a hospital.
setting and twenty four (9.5 %) were in supervisory positions with regular patient contact. Therefore, ninety eight percent of the participants reported at least some regular direct contact with patients.

Figure 2 displays a breakdown of the primary work site for the total sample.

![Figure 2: Primary Work Site of Participants](image)

Fig. 2. Breakdown of the total sample by primary work site.

Two hundred and one (80.7 %) participants worked for a fire department. A total of 70 (28.1 %) participants worked
for the Chicago Fire Department. Ninety (36.1%) worked for a suburban Cook County, Illinois fire department and 41 (16.5%) worked for a fire department in a metropolitan location outside of Cook County. Almost one third (32.9%) of the participants worked primarily in a large urban setting (i.e., Chicago).

Procedure

A cover letter, demographics questionnaire and six additional measures were mailed to each participant. The of exposure was rated using a seven point Likert scale (1 = no exposure, 7 = extremely high exposure). In order to obtain a global index of perceived occupational stress, each respondent rated on a seven point scale (1 = not at all stressful, 7 = extremely stressful) the overall level of stress associated with his or her work. Each respondent was then asked to rate his or her perceived satisfaction with the resources offered to emergency medical professionals to assist in coping with work related stress (1 = not at all satisfied, 7 = extremely satisfied). This item was included as an indirect measure of perceived satisfaction with organizational supports.

The respondents were asked to identify the types of activities (e.g., critical incident stress debriefing, employee assistance program, peer support groups, individual counseling, exercise) they participated in to cope with work stress. A list of activities that may be helpful for coping
with stress was provided. Each respondent was given the opportunity to briefly describe what they felt would be most useful to assist emergency medical professionals cope with work stress. This qualitative data set was included to identify the dimensions of stress associated with this type of work and to identify factors that may lessen the personal impact of these stressors.

In order to identify subjects who may have had prior combat exposure, respondents were asked to indicate whether they are a combat veteran or had ever worked as support personnel in a military combat zone.

**Life Event Checklist**

A measure of life events stress was included to control for the effects of nonwork related life event stress on measures of cognitive schemas. Stressful life events have been implicated as an etiological factor associated with a wide range of somatic and psychological disorders (Dohrenwend & Dohrenwend, 1978). However, little is known about how the types of life change events assessed by commonly used life events measures may be associated with alterations in an individual's primary assumptions. Several scales have been developed to assess the stress associated with life change events. The most commonly used measures are the Schedule of Recent Experiences developed by Holmes and Rahe (1967) and the Life Experiences Survey developed by Sarason, Johnson, and Siegal (1978). These have frequently
been used as valid measures of stress and have consistently been found to have relatively small but significant correlations with measures of physical and emotional strain.

The shortened life events checklist used in this study is based on these two measures.

An abbreviated life event checklist was used for purposes of brevity. This measure provided a global index of life event stress utilizing the most potentially serious stressors relevant to this population. First, 26 of the items from the Holmes and Rahe scale (1967) were selected for inclusion. These generally had the highest ranking, in terms of the amount of perceived stress associated with them. Respondents were asked to identify the life events which they had experienced within the preceding 12 months. Individualized ratings of the desirability of these events were obtained by having the respondent indicate whether the event had a positive or negative impact. Negative change indices have been shown to significantly correlate with psychological distress, more so than total change measures (Sarason, Johnson, & Siegel, 1978). Several of the items in the life event checklist (e.g., tragic death, personal loss, and major personal injury) have been defined as traumatic events in epidemiological studies (Norris, 1992).

Simple frequency counts of life events are considered acceptable measures of stress because no life event weighting system has been found to be superior (Banks &
Gannon, 1988; Rahe, 1981). This method of measuring life events stress has been used successfully in several other studies (Cohen, Tyrrell, & Smith, 1993; Banks & Gannon, 1988). Accordingly, frequency counts of the total number of negative life events was used for data analysis.

### Trauma Exposure

Several variables included in the demographics questionnaire are presumed to be predictors of the extent of indirect exposure by emergency medical professionals to extreme and traumatic events. These included the provision of direct patient care, the length of time employed as a paramedic, working primarily in an urban setting (e.g., Chicago), the extent of exposure to violence and the abuse of others and, the average number of runs per shift. Recent studies of traumatic stress have attempted to quantify trauma exposure by using self-report rating scales. These scales measure the overall level of trauma exposure and the exposure to particular extraordinary events (Lund, Foy, Sipprelle, et al., 1984). Measures of combat exposure have been found to correlate significantly with PTSD symptomatology and have been used successfully as discriminating variables in studies of combat veterans (Foy, Rueger, Sipperelle et al., 1984; Foy, Carrol, & Donahue, 1987). The Traumatic Stress Institute Life Event Questionnaire (TSI-LEQ) is a self-report questionnaire that
allows individuals to report a variety of traumatic life experiences (L. A. Pearlman, personal communication, August 17, 1992). The TSI-LEQ was used in this study as a measure of exposure to traumatic life events.

The TSI-LEQ consists of 16 life events (e.g., exposure to war or holocaust, disaster, major interpersonal losses, life threatening illness or injury, physical or sexual abuse, criminal activity) which are extreme and highly distressing (Mac Ian & Pearlman, 1992). These are similar to the events used in other measures of traumatic exposure (Norris, 1992; Helzer, Robins, & McEvoy, 1987). The TSI-LEQ items have high face validity and most would meet the DSM-III-R criteria for a traumatic event (i.e., outside the range of ordinary human experience and one which would result in significant distress in almost anyone). Earlier versions of the TSI-LEQ required the respondent to indicate whether he or she had experienced each event at anytime.

It should be noted that the TSI-LEQ was slightly modified to assess the types of extreme events that are commonly experienced as a result of emergency medical work. Several items were added to the TSI-LEQ that reflect extreme events common to emergency medical work. These include being involved in a serious accident with serious physical injuries; seeing dead or dying people from a disaster or serious accident; and seeing people dead or dying from violence. The respondent was asked to indicate whether they
had experienced each event as a direct result of their work as a paramedic. The items of the TSI-LEQ differentiate between traumatic events that are directly experienced and those that are witnessed or observed. Scores for the TSI-LEQ include the total number of traumatic events experienced, the total number of events experienced in the line of duty, as well as a discrimination between events that are directly experienced and those that are witnessed or observed. Later revisions of the TSI-LEQ have utilized a distress measure in order to systematically assess the subjective effects of each event. However, the version of the TSI-LEQ used in this study did not utilize this distress measure in order to decrease the complexity of the questionnaire and increase participation. It was concluded that a simple count of traumatic events would provide a detailed trauma history for each respondent that would be useful as a discriminating variable.

The dichotomous scoring format for the version of the TSI-LEQ (yes or no) used in this study limits its utility as a quantifiable measure of trauma exposure. The TSI-LEQ is useful for identifying the types of extreme events a respondent has experienced, particularly those which are indirectly experienced as a result of emergency medical work. However, it provides minimal information on the frequency of occurrence for these events over a respondent's lifetime. Some of these events are likely to have been
experienced repeatedly by some respondents over their career. As a result, the TSI-LEQ scores may not adequately differentiate among paramedics in this sample. Many respondents will have experienced a majority of these events on at least one occasion. However, their responses may not reflect the extent of trauma exposure (i.e., experiencing an event only once versus experiencing an event more than 10 times). To summarize, the TSI-LEQ provides information on the types of extreme events experienced over a lifetime and a general estimate of the degree of exposure to traumatic life events. This can be used in conjunction with other indices that provide quantifiable data on trauma exposure (e.g., length of employment as a paramedic; average number of runs per shift; and rating of the perceived exposure to the aftermath of violence and abuse).

Measures of Cognitive Schemas and Primary Assumptions: The Traumatic Stress Institute Belief Scale

The Traumatic Stress Institute Belief Scale (TSI-BS) is a recently developed measure designed to measure changes in cognitive schemas that follow exposure to traumatic events (L.A. Pearlman, personal communication, May 29 & December 4, 1991; July 14, 1993). This measure is based on McCann and Pearlman's (1990; see also McCann, Sakheim, & Abrahamson, 1988) theory of psychological responses to traumatic life events. They hypothesized that psychological trauma results in disruption of cognitive schemas involving needs for
safety, trust, control, esteem and intimacy. Each of these areas are further divided into two loci (schemata related to the self and schemata related to others). The items of the TSI-BS were rationally derived to reflect each of these schema categories. They have been validated as empirically separable and reliable cognitive factors. Normative data from several criterion groups (trauma therapists, outpatient clients and chronic patients) are available (Pearlman & Mac Ian, 1995).

The TSI-BS consists of 90 items that are rated on a six point Likert scale (1 = disagree strongly, 7 = agree strongly). A factor analytic study of the TSI-BS found support for two factors which are consistent with McCann and Pearlman's theory (Stamm, Bieber, & Pearlman, 1991). There was also some support for a third factor (safety) but it was not statistically significant. These factors are labeled 1) viability of the self, 2) the tenor of the world in relation to the self and, 3) safety. It was concluded that there would be more support for the safety factor when clinical groups are studied.

The TSI-BS consists of the following subscales: self safety; other safety; self trust; self esteem; self intimacy; self control; other trust; other esteem; other intimacy; and other control. A description of what each subscale reportedly measures is provided below:
**Self and Other Safety:**

**Self-Trust:** The belief that an individual can rely on his or her perceptions and judgments.

**Self-Esteem:** Beliefs associated with self worth and value.

**Self-Control:** This measures beliefs regarding the ability to be in control of internal events such as emotions and behavior.

**Self-Intimacy:** Belief that the individual is able to soothe, comfort and nurture themself.

**Other-Trust:** Generalized expectancies that others can be relied upon and trusted.

**Other-Esteem:** Belief that other people are basically good and caring.

**Other-Intimacy:** Pertains to the need for intimate attachments with other people and longings for intimacy and closeness.

**Other-Control:** Belief that one can control future outcomes in relationships and external events.

Subscale scores are averages. They are computed by reversing appropriate items, adding item scores, and dividing the subscale total score by the number of items comprising the subscale. A higher score is purported to
reflect greater disruption in the cognitive schema measured by the subscale. The subscales of the TSI-BS have good internal consistency reliability, with Cronbach's alpha ranging between .75 to .90 (L.A. Pearlman, personal communication, July 14, 1993; July 1, 1994).

It should be noted that four items from the "other safety" subscale were excluded from the TSI-BS instrument used in this study. These items were omitted because they were considered too offensive for this population (e.g., "I fear my capacity to harm others"). They were also omitted on theoretical grounds because their content may measure beliefs that are somewhat different from what this subscale was reportedly designed to assess (e.g., beliefs associated with the capacity to control aggressive impulses directed at others).

The World Assumptions Scale

The World Assumptions Scale (WAS) is a self-report questionnaire that measures the core psychological assumptions delineated in Janoff-Bulman's theory of psychological trauma (1989). The WAS consists of 32 items that reportedly measure the following: benevolence of the world, meaningfulness of the world, and self worth. Factor analyses have indicated that the scale is composed of three independent factors that are consistent with Janoff-Bulman's theory. The following four item subscales comprise each factor: benevolence of the world and people (benevolence);
justice, control and randomness (meaningfulness of the world) and self-worth, self-controllability and luck (self-worth). All of the four item subscales representing each of the assumptions have adequate reliabilities, with Alpha coefficients ranging between .66 and .78. A six point scale is used to rate the degree to which the respondent agrees with each item (1 = disagree strongly, 6 = agree strongly). Scores on a subscale are obtained by summing responses across items comprising the subscale.

The WAS appears to have face validity, an independent factor structure consistent with theory and reliable subscales (Janoff-Bulman, 1989). The WAS has been empirically supported as a sensitive measure of the cognitive sequela of psychological trauma (Janoff-Bulman, 1992). The primary assumptions of individuals exposed to psychological trauma, when measured by the WAS, tend to be more negative and threatening.

It is important to point out that only one subscale of the WAS was used in this study (meaningfulness of the world). This 12 item subscale consists of beliefs about the distribution of good and bad events that occur. The degree to which a person believes that events occur according to principles of justice and which can be controlled or influenced can affect feelings of personal vulnerability. The meaningfulness of the world subscale (WAS-MOW) was selected for inclusion because it was expected to contribute
incremental validity to the assessment of cognitive schemas. This subscale does not conceptually overlap significantly with the TSI-BS due to its assessment of beliefs about the "justice" and randomness of events. It is considered to be an index of an individual's "general frame of reference" that can influence whether a person will adopt a hopeful orientation toward the future, as well as, a belief in an internal locus of control.

Social Support

Perceived social support was measured by the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet, Dahlem, Zimet, et al., 1988). This instrument consists of a twelve item, self-report measure of perceived social support received from three sources (family, friends, and significant others). Respondents use a 7-point Likert type scale to rate the degree to which they agree with the content of each item (1 = very strongly disagree, 7 = very strongly agree). The MSPSS is considered to be a global functional measure of social support. It does not provide an indepth assessment of the availability or adequacy of specific support functions. The content of the MSPSS items reportedly tap several things: the extent to which an individual feels connected to and accepted by others; whether these interpersonal resources can be counted on to help in times of need; and the perceived extent to which the
individual can talk about problems and share feelings. These do reflect, to some extent, the functions of emotional support and acceptance or belonging. Emotional support is considered to be an important functional category of social support. It represents a support need that is relevant across a wide range of stressors.

Several studies have supported the construct validity of the MSPSS and have indicated that the scale is psychometrically sound (Zimet, Dahlem, Zimet, et al., 1988; Zimet, Powell, Farley, et al., 1990; Corkey & Zimet, 1987). The scale is comprised of three factors that correspond very closely to the designated subscales. All of the subscales for the MSPSS are significantly correlated with one another, particularly the friends and significant other subscales (r = .58). The family subscale is considered to function in a more independent manner. The MSPSS does not appear to be significantly influenced by social desirability and has excellent internal consistency reliability (total scale Alpha = .91; family = .90; friends = .94; significant other = .95) (Dahlem, Zimet, & Walker, 1991; Kazarian & McCabe, 1991). Earlier studies with the MSPSS have indicated that it has adequate stability, with test-retest reliability of the total scale being .85 and ranging between .72 to .85 for the individual subscales (Zimet, Dahlem, & Zimet, et al., 1988; Blummenthall et al., 1987). Given what is reported above, the MSPSS appears to be a valid, psychometrically
sound, brief, global measure of perceived social support.

**Hardiness**

In this study a modified version of Kobasa's (1979) measure of personality hardiness was used. This modified measure of hardiness (Hardiness Scale-Short Form) has been described by Bartone, Ursano, Wright, and Ingraham (1989). They found it to be an important moderator variable to the stress experienced by a group of emergency assistance workers. This modified measure of hardiness reportedly corrected some of the problems found in the original measure (e.g., cumbersome length, awkward wordings of items, and the exclusive use of negative item indicators). The Hardiness Scale-Short Form consists of forty five items that were selected on the basis of high item to scale correlations. The respondents rate the degree to which they agree with the content of each item using a four point scale (1=not true at all, 4=completely true). The measure has three factors labeled commitment, challenge and control. Fifteen of the items are positively scored. The rest are negatively scored. When overlapping items are controlled for, this modified measure correlates .71 with the original hardiness scale. The three subscales have adequate reliability, with internal consistency coefficients ranging between .62 and .82. Chronbach's Alpha was .85 for the overall measure (Bartone, Ursano, Wright, et al., 1989). Test-retest.
reliability for shortened versions of the hardiness scale's total score range from .61 to .74 (Langemo, 1990; Hull, Vantreuren, & Virnelli, 1987)

**Substantive Hypotheses**

1) Paramedics who work primarily in an urban setting (i.e., Chicago) will experience greater indirect trauma exposure, greater occupational stress, and greater disruption of cognitive schemas, as indicated by significantly greater scores on the TSI-BS and WAS-MOW.

2) Paramedics with greater work related trauma exposure will experience greater disruption in particular schemas. These will involve beliefs about the benevolence of the world (TSI-BS Other-Trust, Other-Esteem, and Other-Intimacy), vulnerability (Self and Other-Safety) and general frame of reference (WAS-MOW).

3) Scores on the TSI-BS, WAS-MOW and occupational stress ratings will correlate significantly with the following variables: level of exposure to the aftermath of violence and abuse; the average number of EMS runs per shift; as well as, the number of negative life events, and the number of traumatic life events.

4) The following variables will independently contribute significantly to the prediction of TSI-BS and WAS-MOW scores: total number of negative life events (LEQ); total number of non-work related traumatic life events.
(TSI-LEQ); and total number of work related traumatic life events (TSI-LEQ); social support (MSPSS); and hardiness.

5) Perceived social support, as measured by the MSPSS, will moderate the negative effects of stress and trauma exposure with respect to the degree of disruption in cognitive schemas and primary assumptions.

6) Personality hardiness, as measured by the Hardiness Scale-Short Form, will not moderate the effects of traumatic stress on the degree of disruption in cognitive schemas and primary assumptions.

**Null Hypotheses**

The following null hypotheses were tested:

1) There will be no significant differences in the extent of indirect exposure to trauma and occupational stress ratings across those paramedics working in an urban setting and those paramedics working in a nonurban setting.

2) There will be no significant differences in the TSI-BS and WAS-MOW scores across those paramedics working primarily in an urban setting and those paramedics working in a nonurban setting.

3) Scores on the TSI-BS, WAS-MOW and the occupational stress ratings will not significantly correlate with the level of exposure to the aftermath of violent trauma, the average number of EMS runs per shift, the
number of negative life events, the number of traumatic life events, hardiness, social support and organizational support.

4) The following variables will not independently contribute significantly to the prediction of TSI-BS and WAS-MOW scores: number of negative life events (LEQ); number of non-work related traumatic life events (TSI-LEQ); number of work related traumatic life events (TSI-LEQ); average number of EMS runs per shift; work exposure to violent trauma; hardiness, social support, and organizational support.

5) There will be no significant statistical relationships among traumatic stress levels, MSPSS scores, TSI-BS scores and WAS-MOW scores.

6) There will be no significant relationships among traumatic stress levels, the Hardiness Scale scores, TSI-BS scores and WAS-MOW scores.
CHAPTER IV
RESULTS

Preliminary Analyses

The participant's average length of employment as an EMT was 10.43 years (SD=5.59), with a range from 7 months to 30 years. The average number of runs per shift was 7.86 (SD=5.03) with a range from 0 to 23. The mean rating (1=No Exposure; 7=Extremely High Exposure) of perceived work related exposure to the aftermath of violent trauma was 5.14 (SD=1.46) with a range from 2.0 to 7.0. The mean rating (1=Not at All Stressful; 7=Extremely Stressful) of perceived occupational stress was 4.69 (SD=1.19) with a range from 1.0 to 7.0. Lastly, the mean rating (1=Not at All Satisfied; 7=Extremely Satisfied) of perceived satisfaction with the services offered to assist EMT-P's to cope with work stress was 3.41 (SD=1.66) with a range from 1.0 to 7.0.

There was significant variability across participants on many of the work related variables. As a whole, the sample is an experienced group of emergency medical professionals with several years of direct care experience in a variety of clinical settings who frequently respond to a high number of emergencies each shift. They reported a
high degree of work related exposure to violent trauma and perceived their jobs as at least moderately stressful. However, they perceived work related organizational supports as less than optimal in assisting them to cope with these occupational stressors.

The Traumatic Stress Institute Life Event Questionnaire (TSI-LEQ) provides information on the types of extreme events that participants have been exposed to, particularly those that are a result of their work as an EMT-P. The frequency data for each life event of the TSI-LEQ that was experienced in non-work and work related contexts is listed in Table 3

### TABLE 3

**FREQUENCY DATA FOR THE ITEMS OF THE TRAUMATIC STRESS INSTITUTE LIFE EVENT QUESTIONNAIRE**

<table>
<thead>
<tr>
<th>Life Event</th>
<th>Setting</th>
<th>Non-Work</th>
<th>Work</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Personally affected by war or Holocaust</td>
<td>a. 26</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. (10)</td>
<td>(2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Natural or human induced disaster.</td>
<td>14</td>
<td>177</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6)</td>
<td>(71)</td>
<td>(0)</td>
<td></td>
</tr>
<tr>
<td>3. Serious accident in which you or others suffered serious physical injury.</td>
<td>16</td>
<td>98</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6)</td>
<td>(39)</td>
<td>(0)</td>
<td></td>
</tr>
<tr>
<td>4. Saw dead or dying people as a result of a disaster or serious accident.</td>
<td>3</td>
<td>240</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(96)</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>5. Physical or emotional loss of a significant other.</td>
<td>108</td>
<td>12</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(43)</td>
<td>(5)</td>
<td>(1)</td>
<td></td>
</tr>
</tbody>
</table>

**Note.**  
\(a = \text{n.} \quad b = \text{percent.}\)
<table>
<thead>
<tr>
<th>Life Event</th>
<th>Setting</th>
<th>Non-Work</th>
<th>Work</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Experienced a life threatening illness or injury.</td>
<td></td>
<td>23 (9)</td>
<td>44 (18)</td>
<td>0</td>
</tr>
<tr>
<td>7. A close family member was diagnosed with a life threatening illness.</td>
<td></td>
<td>122 (49)</td>
<td>8 (3)</td>
<td>0</td>
</tr>
<tr>
<td>8. Observed emotional abuse of another person.</td>
<td></td>
<td>28 (11)</td>
<td>192 (77)</td>
<td>3 (1)</td>
</tr>
<tr>
<td>9. Personally experiences domestic violence, neglect or abuse.</td>
<td></td>
<td>25 (10)</td>
<td>76 (30)</td>
<td>1 (0)</td>
</tr>
<tr>
<td>10. Personally experienced emotional abuse.</td>
<td></td>
<td>52 (21)</td>
<td>68 (27)</td>
<td>0</td>
</tr>
<tr>
<td>11. Observed sexual abuse or rape of another person.</td>
<td></td>
<td>8 (3)</td>
<td>110 (44)</td>
<td>0</td>
</tr>
<tr>
<td>12. Personally experienced sexual abuse as a child (under 18).</td>
<td></td>
<td>15 (6)</td>
<td>0 (0)</td>
<td>0</td>
</tr>
<tr>
<td>13. Personally experienced sexual abuse as an adult.</td>
<td></td>
<td>7 (3)</td>
<td>0 (0)</td>
<td>0</td>
</tr>
<tr>
<td>14. Observed criminal activity other than rape.</td>
<td></td>
<td>22 (9)</td>
<td>138 (55)</td>
<td>0</td>
</tr>
<tr>
<td>15. Personally experienced criminal activity other than rape that was psychologically or emotionally harmful.</td>
<td></td>
<td>23 (9)</td>
<td>63 (25)</td>
<td>0</td>
</tr>
<tr>
<td>16. A parent/loved one/caretaker was the victim of a violent crime (eg., rape, mugging, assault).</td>
<td></td>
<td>57 (23)</td>
<td>0 (0)</td>
<td>0</td>
</tr>
<tr>
<td>17. Felt responsible for the serious injury or death of another person in a non-war related situation.</td>
<td></td>
<td>4 (2)</td>
<td>25 (10)</td>
<td>0</td>
</tr>
<tr>
<td>18. Heard about or witnessed the after effects of physically and/or emotionally abusive experiences of others.</td>
<td></td>
<td>23 (9)</td>
<td>181 (72)</td>
<td>0</td>
</tr>
<tr>
<td>19. Observed domestic violence, neglect or physical abuse of another person.</td>
<td></td>
<td>7 (3)</td>
<td>214 (86)</td>
<td>1</td>
</tr>
<tr>
<td>20. Observed people dying or dead as a result of abuse or violence.</td>
<td></td>
<td>0 (0)</td>
<td>214 (86)</td>
<td>0</td>
</tr>
</tbody>
</table>
An examination of the TSI-LEQ data set indicates that, as a group, the participants have had significant direct and indirect exposure to a range of extreme life events. A significant minority of participants have directly experienced sexual or emotional abuse, a life threatening illness, or a significant other being the victim of a violent crime. As Table 3 indicates most EMT-P's in the sample have been indirectly exposed as a result of their work to a range of extreme stressors. The data indicates that working as an EMT-P clearly increases the probability of being indirectly exposed to a range of extreme events taking place in the lives of others, as well as directly experiencing psychologically harmful criminal activity and emotional abuse.

Table 4 presents a rank order of the activities utilized by participants to cope with work related stress.

<table>
<thead>
<tr>
<th>Activity</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Exercise or Athletics</td>
<td>183</td>
<td>73</td>
</tr>
<tr>
<td>2. Hobbies</td>
<td>163</td>
<td>64</td>
</tr>
<tr>
<td>3. Informal Co-worker Support</td>
<td>147</td>
<td>58</td>
</tr>
<tr>
<td>4. Critical Incident Stress Debriefing (CISD)</td>
<td>76</td>
<td>30</td>
</tr>
<tr>
<td>5. Religious Activities</td>
<td>62</td>
<td>25</td>
</tr>
</tbody>
</table>
Overall, the EMT-P's in this sample have utilized non-professional activities to cope with work related stress. Exercise and athletics were reported to be the most frequently utilized coping activities. Participants have utilized informal supports from co-workers as a primary coping resource. Their qualitative responses (see Appendix C) indicate that they use these work relationships for "talking out" a run, catharsis, and emotional support. Almost one third of the participants had utilized CISD on at least one occasion for critical incidents. Many participants wrote favorably about their participation in a CISD. Some participants reported that these types of experiences should be easier to access without a fear of stigmatization by co-workers or administrative personnel. Less than 15 % of participants had ever used counseling or EAP services to reduce work stress. This finding is consistent with their stated preference for engaging in activities with other emergency medical professionals who
can easily understand their experiences.

**Characteristics of the Sample by Group**

The total sample was partitioned into comparison groups based on the participant's primary worksite and whether the participant worked primarily in an urban setting (i.e., Chicago). It was hypothesized that EMT-P's working primarily in an urban setting would have greater exposure to extreme trauma, particularly trauma involving the aftermath of human induced violence, and higher levels of occupational stress. This was tested by determining whether the groups differed significantly on relevant work related variables. A summary of the comparative univariate analyses utilizing a one-way analysis of variance and two sample t-tests on several variables that were believed to be indices of stress and indirect exposure to trauma is presented in Tables 5 and 6.
## TABLE 5

UNIVARIATE ANALYSES OF DEMOGRAPHICS VARIABLES, WORK-RELATED VARIABLES AND INDICES OF STRESS BY PRIMARY WORK SITE

<table>
<thead>
<tr>
<th>Variable</th>
<th>CFD</th>
<th>SFD</th>
<th>OFD</th>
<th>Private</th>
<th>Other</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>36.53</td>
<td>34.44</td>
<td>33.54</td>
<td>32.6</td>
<td>35.5</td>
<td>ns</td>
</tr>
<tr>
<td>SD</td>
<td>5.59</td>
<td>7.34</td>
<td>5.57</td>
<td>8.78</td>
<td>8.75</td>
<td></td>
</tr>
<tr>
<td>m</td>
<td>70</td>
<td>89</td>
<td>41</td>
<td>32</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td><strong>Length of Employment (Months)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>157.4</td>
<td>121.04</td>
<td>94.28</td>
<td>105</td>
<td>124.8</td>
<td>7.72***</td>
</tr>
<tr>
<td>SD</td>
<td>57.81</td>
<td>67.8</td>
<td>53.7</td>
<td>74.3</td>
<td>65.39</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>70</td>
<td>90</td>
<td>40</td>
<td>32</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td><strong>Average Number of Runs per Shift</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>13.5</td>
<td>4.49</td>
<td>6.34</td>
<td>9.07</td>
<td>5.2</td>
<td>75.22***</td>
</tr>
<tr>
<td>SD</td>
<td>4.61</td>
<td>2.24</td>
<td>2.68</td>
<td>3.25</td>
<td>4.13</td>
<td></td>
</tr>
<tr>
<td>m</td>
<td>70</td>
<td>89</td>
<td>41</td>
<td>30</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><strong>Work Exposure to ViolentTrauma</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>6.34</td>
<td>4.27</td>
<td>5.37</td>
<td>4.84</td>
<td>4.73</td>
<td>30.77***</td>
</tr>
<tr>
<td>SD</td>
<td>0.83</td>
<td>1.44</td>
<td>1.2</td>
<td>1.08</td>
<td>1.28</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>70</td>
<td>90</td>
<td>41</td>
<td>32</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

Note: CFD = Chicago Fire Department. SFD = Suburban Cook County Fire Department. OFD = Other Fire Department. These participants worked for fire departments in large metropolitan areas in Illinois including Rockford, Joliet, Aurora, Decatur and Springfield. Private = ambulance company. The group labeled "other" includes participants who worked either in multiple settings or in a hospital setting; for the Springfield ESDA Rescue Squad, as a Loyola Medical Center lite paramedic; and with a suburban police department; *** p>.001.
<table>
<thead>
<tr>
<th>Variable</th>
<th>CFD</th>
<th>SFD</th>
<th>OFD</th>
<th>Private</th>
<th>Other</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total-Traumatic Events (TSI-LEQ)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>10.7</td>
<td>9.61</td>
<td>9.02</td>
<td>9.69</td>
<td>9.44</td>
<td>ns</td>
</tr>
<tr>
<td>SD</td>
<td>2.91</td>
<td>3.25</td>
<td>2.7</td>
<td>3.79</td>
<td>3.27</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>68</td>
<td>90</td>
<td>41</td>
<td>32</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Total Work Related Traumatic Events</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(TSI-LEQ)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>7.94</td>
<td>7.38</td>
<td>7.83</td>
<td>7.06</td>
<td>6.69</td>
<td>ns</td>
</tr>
<tr>
<td>SD</td>
<td>2.59</td>
<td>2.68</td>
<td>2.29</td>
<td>2.87</td>
<td>2.52</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>68</td>
<td>90</td>
<td>41</td>
<td>32</td>
<td>16</td>
<td></td>
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<tr>
<td>Total Stressful Life Events (LEQ)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>3.99</td>
<td>3.82</td>
<td>3.54</td>
<td>5.41</td>
<td>4.87</td>
<td>ns</td>
</tr>
<tr>
<td>SD</td>
<td>3.08</td>
<td>3.02</td>
<td>2.36</td>
<td>4.27</td>
<td>2.77</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>70</td>
<td>89</td>
<td>41</td>
<td>32</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Total Negative Life Events (LEQ)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>1.87</td>
<td>1.2</td>
<td>0.8</td>
<td>2.44</td>
<td>1.73</td>
<td>4.31***</td>
</tr>
<tr>
<td>SD</td>
<td>1.99</td>
<td>1.75</td>
<td>1.33</td>
<td>2.77</td>
<td>2.34</td>
<td></td>
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<tr>
<td>n</td>
<td>70</td>
<td>89</td>
<td>41</td>
<td>32</td>
<td>15</td>
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</tr>
<tr>
<td>Perceived Occupational Stress</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>5.41</td>
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<td>SD</td>
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<td>0.97</td>
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Table 5 Continued.

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<th>OFD</th>
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<tr>
<td>With Organizational Supports</td>
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<td>87</td>
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Significant differences were found across groups on several variables that are considered to be indices of stress and exposure to extreme events. A series of post-hoc multiple comparisons were performed utilizing Bonferroni tests for adjusted significance levels. The results indicate that compared to all other groups, the EMT-P's who worked for the Chicago Fire Department responded to a higher number of emergency responses each shift; reported significantly greater exposure to the aftermath of human induced violence and abuse; and experienced greater perceived occupational stress. As a group, the EMT-P's who worked for the Chicago Fire Department had greater work experience, compared to those participants who worked for either a private ambulance company or a fire department outside of Chicago. Compared to all other groups except those working for a private company, Chicago Fire Department EMT-P's reported significantly less satisfaction with available supports for coping with work-related stress. The
results presented in Table 6 indicate that these differences were maintained when the sample was partitioned into two groups based on if the participant reported working primarily in an urban setting. Urban EMT-P's reported a greater number of runs per shift, greater work exposure to the violent trauma of others, greater occupational stress and less satisfaction with organizational supports. The two EMT-P groups did not differ with respect to the number of work-related traumatic events, the total number of coping activities, perceived satisfaction with social supports and hardiness level.

<table>
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<tr>
<td></td>
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<td>SD</td>
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<tr>
<td></td>
<td>n</td>
<td>166</td>
<td>82</td>
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</tbody>
</table>

Note. a. = A separate variance t-test was used due to unequal population variance estimates for the two groups on these variables. **p<.01. ***p<.001.
<table>
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<th>Variable</th>
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<td>Non-Urban</td>
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<tr>
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<td>1.18</td>
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<td>1.74</td>
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<td>n</td>
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Table 6 Continued.

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<td>Urban</td>
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<td>Perceived Social Support (MSPSS)</td>
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<tr>
<td>Hardiness Total Score</td>
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<td>M</td>
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<td>98.38</td>
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<tr>
<td>SD</td>
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<td>8.24</td>
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<tr>
<td>n</td>
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Primary Analyses

Three analyses were conducted to investigate whether the repeated indirect exposure to trauma associated with emergency medical work exhibited a direct effect on the participant's primary assumptions about the world, self and others. First, the participant's TSI-BS subscale scores were compared with those of three criterion groups (trauma therapists, outpatient clients, and chronic patients). The second analysis utilized a multivariate analysis of variance (MANOVA) procedure to determine whether there were measurable differences on the TSI-BS and WAS scores between EMT-P's working primarily in an urban and non-urban setting. Multiple regression models were used to identify the predictors of perceived occupational stress, as well as TSI-BS and WAS scores among the participants of this study.
Hierarchical regression analyses were also performed in order to test for a buffering effect of social support, organizational support, and hardiness, as well as investigating whether social support and hardiness are significantly interrelated.

**Comparative Analysis of The Traumatic Stress Institute Belief Scale Scores for The EMT-P Groups and Three Criterion Groups**

The TSI-BS subscale scores for the EMT-P's and three criterion groups are presented in Table 7. TSI-BS scores for the total sample of EMT-P's in this study, as well as for those EMT-P's working primarily in an urban setting are presented. Subscale scores are mean values based on a six point Likert rating scale. A higher score indicates greater disruption in the cognitive schema believed to be measured by the subscale. The TSI-BS normative data for the three criterion groups was collected by researchers at The Traumatic Stress Institute. Trauma therapists are considered an appropriate comparison group for EMT-P's because of their high degree of secondary exposure to the traumatic memories of their clients. The patient groups included individuals who had directly experienced traumatic events and who experienced significant psychological distress. No normative data was available for the self and other-control subscales of the TSI-BS.
<table>
<thead>
<tr>
<th>TSI-BS Subscale</th>
<th>EMT-P's Total Sample</th>
<th>Urban Trauma Therapist</th>
<th>Outpatient Clients</th>
<th>Chronic Patients</th>
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<tbody>
<tr>
<td>Safety</td>
<td>2.32 (.59)</td>
<td>2.47 (.89)</td>
<td>3.13 (.98)</td>
<td>3.70 b. (1.24)c.</td>
</tr>
<tr>
<td>Self-Trust</td>
<td>1.64 (.60)</td>
<td>1.98 (1.09)</td>
<td>2.73 (.96)</td>
<td>3.39</td>
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<tr>
<td>Self-Esteem</td>
<td>1.53 (.54)</td>
<td>1.54 (.61)</td>
<td>2.41 (.92)</td>
<td>3.27</td>
</tr>
<tr>
<td>Self-Intimacy</td>
<td>2.37 (.72)</td>
<td>1.84 (.63)</td>
<td>2.48 (.97)</td>
<td>3.69 (1.34)</td>
</tr>
<tr>
<td>Other-Trust</td>
<td>2.35 (.83)</td>
<td>2.10 (.71)</td>
<td>2.88 (.96)</td>
<td>3.37 (1.03)</td>
</tr>
<tr>
<td>Other-Esteem</td>
<td>2.50 (.62)</td>
<td>2.93 (.67)</td>
<td>3.12 (.90)</td>
<td>3.55 (1.80)</td>
</tr>
<tr>
<td>Other-Intimacy</td>
<td>2.04 (.71)</td>
<td>1.99 (.89)</td>
<td>3.26 (1.22)</td>
<td>3.58 (1.21)</td>
</tr>
<tr>
<td>Self-Control</td>
<td>2.35 (.73)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other-Control</td>
<td>2.54 (.74)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Note a. = The data for these three criterion groups was collected by researchers at The Traumatic Stress Institute. This data was used with permission by the authors. Source: Pearlman, L.A., & Mac Ian, P.S. (1995) The TSI Belief Scale: Normative data from four criterion groups. Manuscript in preparation. The Traumatic Stress Institute.
b. = Mean subscale score. c. = Standard deviation.
The data in Table 7 is consistent with both McCann and Pearlman's (1990) and Janoff-Bulman's (1992) theories on the psychological impact of traumatization. The two patient groups had higher mean scores and greater variability on all the TSI-BS subscales. Individuals in treatment for chronic psychological problems had the greatest degree of disruption in primary assumptions. The overall level of TSI-BS scores for all groups indicates that few participants experienced generalized negative beliefs about self and others (i.e., believing that they have no self worth; not trusting anyone; having no esteem for others). However, a significant percentage of the participants in the patient groups had scores reflective of a notable degree of negative beliefs about themselves and others.

The mean TSI-BS scores for the total sample of EMT-P's do not suggest significant disruption of primary assumptions. Histogram plots of the mean TSI-BS subscale scores for the total sample of EMT-P's indicate that the distributions of several subscales were negatively skewed with less variation in scores (see Figures 3 - 12).
Fig. 3. Histogram of mean scores for the TSI-BS self-trust subscale.
Fig. 4. Histogram of mean scores for the TSI-BS self-esteem subscale.
Fig. 5. Histogram of mean scores for the TSI-BS self-intimacy subscale.
Fig. 6. Histogram of mean scores for the TSI-BS self-safety subscale.
Fig. 7. Histogram of mean scores for the TSI-BS self-control subscale.
Fig. 8. Histogram of mean scores for the TSI-BS other-trust subscale.
Fig. 9. Histogram of mean scores for the TSI-BS other-esteem subscale.
Fig. 10. Histogram of mean scores for the TSI-BS other-intimacy subscale.
Fig. 11. Histogram of mean scores for the TSI-BS other-control subscale.
Fig. 12. Histogram of mean scores for the TSI-BS other-safety subscale.
These include the Self-Trust, Self-Safety, Self-Esteem, and Other-Intimacy subscales. This suggests that the cognitive schemas purported to be measured by these subscales were particularly resistant to disruption among the sample of EMT-P's in this study.

A sizeable minority of participants had scores in the range of those obtained by the patient groups. A range from 1.59 to 13.49 percent of the participants had scores on particular TSI-BS subscales that were at least as large as the mean scores obtained by chronic patients. The Other-Trust subscale had the highest number of EMT-P's scoring in the range of the chronic patient group (n = 34, 13.49%). This was followed by the Other-Esteem and Other-Intimacy subscales (n=16, 6.35 % each). Higher percentages of participants obtained scores similar to the outpatient group on the TSI-BS subscales developed to assess cognitive schemas associated with perceptions of others (19.44% - Other-Trust; 17.46% - Other-Esteem). No normative data was available for the Self and Other-Safety subscales. However, 26 percent (n = 66) of the total sample obtained mean scores of at least 4.0 on the Other-Safety subscale. The results suggest that a significant number of the participants experienced heightened concerns with the vulnerability of significant others. The item content of this subscale primarily relates to beliefs about the safety of family and significant others. Therefore, the results are not likely
to be due solely to the participant's professional role as a "helper".

Overall, the EMT-P's mean TSI-BS subscale scores were similar to those obtained by the trauma therapist comparison group. The EMT-P's who worked primarily in an urban setting had significantly greater mean scores on several TSI-BS subscales compared to the trauma therapists. These differences occurred on the following subscales: Self-Intimacy ($t(264) = 5.63, p = .001$), Other-Intimacy ($t(264) = 2.18, p = .05$) and, Other-Trust ($t(264) = 4.20, p = .001$). Trauma therapists had a significantly greater mean score on the Other-Esteem subscale ($t(264) = -2.41, p = .02$). The magnitude of these differences was small.

The comparative analyses of the TSI-BS scores for the EMT-P group and three criterion groups suggest the following: 1) As a total group there was no evidence of major disruption of cognitive schemas measured by the TSI-BS among the EMT-P participants; 2) A sizeable minority of the participants obtained scores similar to those obtained by patient groups, particularly on those TSI-BS subscales developed to assess an individual's beliefs about others (i.e., Other-Trust and Other-Esteem); 3) Almost a third of the participants experienced significant concerns with the safety of significant others and; 4) In general, the participant's TSI-BS subscale scores were similar to those obtained by a sample of trauma therapists. However, urban
EMT-P's obtained higher mean scores than the trauma therapists on TSI-BS subscales developed to assess beliefs about an individual's ability to comfort themselves (Self-Intimacy), longings for intimacy and closeness (Other-Intimacy) and, trust in others (Other-Trust).

Multivariate Analysis of Variance of the TSI-BS and WAS-MOW subscale scores for Urban and Non-Urban EMT-P's

A multivariate analysis of variance (MANOVA) procedure was used to examine whether there were significant group differences on the TSI-BS and WAS-MOW subscales for EMT-P's working in an urban and non-urban setting. In order to assess whether the sample data met the necessary statistical assumptions for a MANOVA model (i.e., multivariate normality of the dependent variables; homogeneity of variances and the pooled variance-covariance matrix), the distributions of the TSI-BS and WAS-MOW subscale scores for the participants were examined using histogram (see Figures 3 through 12; Figures 13 through 15) and normal probability plots. Univariate homogeneity of variance tests were also computed for each TSI-BS and WAS-MOW subscale to determine if the variances for the urban and non-urban EMT-P groups differed significantly.
Fig. 13. Histogram of mean scores for the WAS-MOW control subscale.
Fig. 14. Histogram of mean scores for the WAS-MOW justice subscale.
Fig. 15. Histogram of mean scores for the WAS-MOW randomness subscale.
These results indicated that the distributions for four TSI-BS subscales (Self-Esteem, Self-Trust, Self-Safety, and Other-Intimacy) were markedly non-normal and with unequal group variances. Power transformations were applied to each participants scores on each of these subscales. The scores were transformed using a natural logarithmic function. Reexamination of the distributions, group variances and the pooled variance covariance matrix (Box's M = 115.89; F (91, 83249) = 1.19, p = .106) indicated that the data transformations sufficiently corrected the above mentioned departures from the MANOVA assumptions. After statistically adjusting four TSI-BS subscales that were markedly non-normal and with unequal variances across groups, the sample data met the necessary statistical assumptions for a MANOVA procedure.

The total number of non-work related traumatic events experienced by each participant that were reported on the TSI-LEQ and the total number of negative life events reported on the LEQ were entered into the MANOVA as covariates. This was done so that the effect of these variables on the TSI-BS and WAS-MOW subscale scores was statistically controlled when testing for group differences. The multivariate statistic was found to be significant (Hotellings = .137; F = 2.40, p < .01). The means and a summary of the F statistics for the univariate comparisons among the urban and non-urban EMT-P groups are presented in
Table 8. Urban EMT-P's had significantly greater scores on the following TSI-BS subscales: Other-Esteem, Other-Intimacy, Other-Safety and Self-Safety. These subscales were developed to measure beliefs of unique vulnerability of self and others to future harm or loss, beliefs regarding the goodness of others and the need for intimate attachments with other people. There were no significant differences between the groups on the individual components of the WAS-MOW subscale. The groups did not differ in their beliefs about justice, control or the randomness of events. The mean total scores of the WAS-MOW scale for each group (Non-Urban EMT-P's: M = 41.43, SD = 7.53; Urban EMT-P's: M = 40.88, SD = 6.73) were not found to be significantly different, \( t (246) = -.57, \) ns. However, the mean TSI-BS total scores (Non-Urban EMT-P's: M = 184.46, SD = 39.11; Urban EMT-P's: M = 202.49, SD = 46.72) for the two groups were found to be significantly different (separate variance \( t \) test \( (138.63) = 3.01, p < .01 \)).
A discriminant analysis was performed to identify the linear combinations of the dependent variables that best separated the urban and non-urban EMT-P groups. The standardized discriminant function coefficients for the above mentioned subscales were examined in order to identify...
which ones were most important for discriminating between the urban and non-urban EMT-P participants. The other-esteem, other-intimacy, and self-safety subscales had the highest standardized discriminant function coefficients (-.604, -.552 and -.607 respectively).

The preceding analyses demonstrated statistically significant group differences for urban and non-urban EMT-P's on several TSI-BS subscales. The multivariate effect size was .127 which indicates low magnitude of effects for the group differences when the dependent variables are considered simultaneously. Effect sizes were calculated for each TSI-BS subscale in which statistically significant differences were indicated. These univariate effect sizes were uniformly low (eta squared < .05). The following procedure was used to provide an index of the clinical significance of the group differences for the Other-Esteem and Other-Intimacy subscales: a) the mean scores obtained by the chronic patient group on these TSI-BS subscales were used as a cutoff point; b) the percentage of individuals in each EMT-P sample who exceeded these cutoff points were computed and; c) these results were examined for non-trivial differences between urban and non-urban EMT-P groups. No normative data was available for the Other and Self-Safety subscales. Therefore, the score that was at least one standard deviation above the mean for the urban group was used as a cut off point. A score of 4.51 and 3.0
for the other-safety and self-safety subscale respectively were approximately one standard deviation above the mean for the urban EMT-P group. The percentage of individuals in each EMT-P group who exceeded these cut off points were examined for non-trivial differences.

There were non-trivial differences in the percentage of urban and non-urban EMT-P's who obtained scores on the Other-Esteem and Other-Intimacy subscales at least as large as the mean obtained by the chronic patient criterion group. These differences were most evident on the Other-Esteem subscale where 14.63 percent (n = 12) of urban EMT-P's obtained scores at least as large as the mean score for the chronic patient criterion group, compared to only 2.41 percent (n = 4) of non-urban EMT-P's. Similar results were obtained on the Other-Intimacy subscale, though the between group differences were not as pronounced (urban = 8.54 %, n = 7; non-urban = 4.82%, n = 8). The mean scores for both groups on the Other-Safety subscale were higher than any other TSI-BS subscale. Higher percentages of urban EMT-P's had clinically significant scores on the Other-Safety subscale (14.63%, n = 12) compared to non-urban EMT-P's (7.83%, n = 13). Similar group differences were evident on the Self-Safety subscale (urban = 13.42%, n = 11; non-urban = 4.22%, n = 7).

Regression Analyses

The following variables were selected as predictors of
the criterion variables: the degree of work exposure to the aftermath of violent trauma; the average number of runs per shift; the total number of non-work related traumatic events; the total number of negative life events; perceived satisfaction with organizational supports; perceived satisfaction with social support; and hardiness. These were considered to be indices of either direct or indirect exposure to trauma or to reflect psychosocial resource variables that may help EMT-P's adaptively cope with work related stress. The total score for the TSI-BS and WAS-MOW, as well as the occupational stress ratings of participants were used as criterion measures. The Pearson product-moment correlations among the major predictor and criterion measures are presented in Table 9.
### TABLE 9
INTERCORRELATIONS OF THE PRIMARY PREDICTOR
AND CRITERION MEASURES

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<tr>
<td>5) Satisfaction with Organizational Supports</td>
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Note: TSI-BS = The Traumatic Stress Institute Belief Scale; MSPSS = The Multidimensional Scale of Perceived Social Support. WAS-MOW = The World Assumptions Scale-Meaningfulness of the World Subscale. * p < .05. ** p < .01. *** p < .001.
There were significant correlations among several predictor variables, however, the magnitudes of most of these correlations were low. Participant ratings of satisfaction with organizational supports were significantly correlated with perceived social support from family, friends and significant others ($r = .19$). However, the strength of this association was weak, suggesting that they were sensitive to different types of social support. The ratings of work exposure to violent trauma and the average number of runs per shift had the highest correlations among the predictor variables ($r = .55$). While there were significant intercorrelations between several predictor variables, the magnitude of these correlations did not indicate serious problems with multicollinearity or significant dependence among the predictor variables.

The results of the bivariate correlations do fit expected patterns, with greater direct and indirect exposure to negative life events or the trauma of others significantly associated with greater disruption of primary assumptions and higher levels of occupational stress. However, the correlations reflect more specific associations between specific indices of stress or trauma exposure and measures of psychological strain. The frequency of runs per shift, the ratings of work exposure to violent trauma and the participant's perceived satisfaction with organizational supports had stronger associations with perceived
occupational stress. This data provides support for the convergent validity of these three variables as being important predictors of occupational stress among EMT-P's. The number of recent negative life events and perceived social support had stronger relationships with the degree of disruption in primary assumptions. The total number of recent negative life events had a stronger relationship to the TSI-BS scale scores (TSI-BS Total Score r = .39; Low = .20 (Self-Intimacy) High = .33 (Other-Control)). Participant ratings of work exposure to violent trauma had a weaker association with the TSI-BS total score (r = .20).

Both indices of social support were negatively correlated with the TSI-BS total score (Organizational Support r = -.34; MSPSS total score r = -.51) and perceived occupational stress ratings (Organizational Support r = -.40; MSPSS total score r = -.17). It should be noted that perceived satisfaction with organizational supports was moderately negatively correlated with occupational stress ratings. However, social support from family, friends and significant others was not strongly associated with participant perceptions of occupational stress. The social support and hardiness measures did not correlate with the WAS-MOW total score.

Hierarchical Regression Analyses:

Hierarchical regression analyses were conducted to assess the unique contribution of each measure of direct and
indirect trauma exposure, as well as three psychosocial resistance resource variables in predicting the primary outcome variables (i.e., occupational stress ratings, TSI-BS and WAS-MOW scores). The first two variables entered into the regression equation were considered to be indices of direct, personal exposure to extreme or negative life events (Trauma: Non-Work, Total Negative). These measures were designed to assess the extent of participant exposure to extreme and negative life events that was not experienced as a result of EMS related patient contact. These events were personally experienced by participants, instead of being witnessed occurring in the lives of others while working as an EMT-P. The next two variables entered into the regression equation were considered to be indices of indirect exposure to traumatic events (Average Runs, Work Exposure). These variables are believed to provide information regarding the extent of the EMT-P participants exposure to the trauma experienced by patients. The last three variables entered into the regression equation consisted of psychosocial resistance resources (Organizational Support, Social Support, Hardiness). These three variables were entered last into the regression model to determine their unique contribution in predicting the outcome variables. Table 10 presents the results of these analyses.
TABLE 10
HIERARCHICAL REGRESSION ANALYSES PREDICTING TSI-BS SCORES, WAS-MOW SCORES, AND PERCEIVED OCCUPATIONAL STRESS

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The first set of regression analyses highlights the importance of considering EMT-P's work load (i.e., the average number of runs per shift), work related exposure to violent trauma, negative life event stress, and the quality of organizational supports when predicting their occupational stress levels. All of the measures of direct and indirect trauma exposure accounted for significant additional variance in predicting perceived occupational stress among the participants. Perceived satisfaction with organizational supports was also a significant predictor of stress ratings.
However, perceived social support received from family, friends and significant others, and hardiness scores did not enter into the equation. The predictors entered into the regression model accounted for 30 percent of the variance in the occupational stress ratings.

All of the predictors, except work exposure to violent trauma, accounted for significant variance in predicting the TSI-BS total scores. Forty percent of the variance in the TSI-BS total scores for the total sample was accounted for by these predictor variables. Perceived social support and the number of recent negative life events accounted for the largest percentage of variance in TSI-BS total scores (.16 and .10 respectively). Although one measure of indirect traumatic exposure (average runs per shift) added significant unique variance beyond the direct measures of trauma exposure, the size of its contribution was small (i.e., an additional 2% of the explained variance in TSI-BS total scores). Hardiness accounted for significantly less variance than social support (3% vs 16%). These results highlight the importance of recent negative life events stress and perceived satisfaction with social support as variables which are significantly correlated with the degree of disruption in primary assumptions about the world and others. In contrast to these findings, only one predictor (work exposure) was significantly correlated with the WAS-MOW total score. Over 97 percent of the variance in WAS-MOW total scores was
unexplained by the variables entered into the regression equation.

The predictors of each TSI-BS subscale were also analyzed with hierarchical regressions. This was done in order to determine if there were different patterns of relationships among the predictors and the individual subscales of the TSI-BS. Among the predictors of traumatic exposure, only directly experienced negative life events accounted for significant additional variance for four of the five TSI-BS subscales involving beliefs about the self. The measures of indirect exposure to traumatic events accounted for additional significant variance beyond the indices of direct trauma exposure on four subscales (Self-Safety, Other-Safety, Other-Esteem, and Other-Intimacy). These are the same subscales which discriminated between the groups of urban and non-urban EMT-P's when analyzed by MANOVA. Indices of social support were significant predictors on all TSI-BS subscales. Social support was a particularly important predictor of the Other-Intimacy, Other-Trust and Other-Esteem subscales. Hardiness accounted for additional variance for only a limited number of TSI-BS subscales. These included the Other-Safety, Other-Control, Self-Control, and Self-Intimacy subscales.

Perceived Social Support, Organizational Support and Hardiness as Trauma Exposure Buffers

The direct effects and buffering hypotheses for three
psychosocial resistance resource variables (i.e., perceived social support, perceived satisfaction with organizational support, and hardiness) were investigated with an analytic strategy based on hierarchical multiple regression. This method of analysis is commonly used as a preferred method for testing moderator effects of "third variables" (Brown, Brady, Lent et al., 1987; Cohen & Wills, 1985). The use of regression methods with continuous predictor variables can minimize the problems (e.g., loss of power, lowered effect size, and spurious statistical significance) that can occur with dichotomized or categorical data (Maxwell & Delaney, 1993).

A cross product term was computed for each index of trauma exposure and each resistance resource variable. Only those indices that were found in previous regression analyses to contribute significantly to the prediction of particular criterion measures were selected as a trauma exposure index. This resulted in the use of different trauma exposure measures for some of the criterion variables. For each trauma exposure index a hierarchical multiple regression was performed on a criterion variable. The following variables were entered in order as predictors into the regression equation: the trauma exposure index value, the psychosocial resistance variable score, and the cross product term (trauma exposure X resistance resource). Separate analyses were performed for social support, perceived satisfaction with
organizational support, and hardiness. The significant additional variance accounted for by the psychosocial resistance resource variable provides evidence of a direct effect on criterion indices. The significance in additional variance accounted for by the interaction term provides evidence for the buffering hypothesis. The results of these analyses are presented in Table 11.
TABLE 11

TESTS FOR BUFFERING EFFECTS OF PERCEIVED SOCIAL SUPPORT, ORGANIZATIONAL SUPPORT, AND HARDINESS ON CRITERION VARIABLES

<table>
<thead>
<tr>
<th>Dependent Variable, Predictors, Cross Product Interaction</th>
<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>Occupational Stress</td>
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<tr>
<td>Total Negative</td>
<td>.01</td>
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</tr>
<tr>
<td>Resistance Resource</td>
<td>.02**</td>
<td>.09***</td>
<td>.00</td>
</tr>
<tr>
<td>Total Negative x Resistance Resource</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Average Runs</td>
<td>.12***</td>
<td>.12***</td>
<td>.12***</td>
</tr>
<tr>
<td>Resistance Resource</td>
<td>.02*</td>
<td>.10***</td>
<td>.00</td>
</tr>
<tr>
<td>Runs x Resistance Resource</td>
<td>.00</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td>Work Exposure</td>
<td>.17***</td>
<td>.17***</td>
<td>.17***</td>
</tr>
<tr>
<td>Resistance Resource</td>
<td>.02*</td>
<td>.10***</td>
<td>.00</td>
</tr>
<tr>
<td>Exposure x Resistance Resource</td>
<td>.00</td>
<td>.02**</td>
<td>.00</td>
</tr>
</tbody>
</table>

Note: a. Separate hierarchical regression results are presented testing buffering effects for each psychosocial resistance resource variable: 1 = perceived social support (MSPSS Total Score). 2 = perceived satisfaction with organizational support. 3 = hardiness (Hardiness Scale Total Score). Trauma: Non-Work = Total number of non-work related extreme life events. Total Negative = Total number of negative life events. Average Runs = Average number of runs per shift. Work Exposure = Perceived degree of work related exposure to violent trauma. * p < .05 ** p < .01 *** p < .001.
Table 11 Continued.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Predictors, Cross Product Interaction</th>
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<th>2</th>
<th>3 a.</th>
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<tbody>
<tr>
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<td>.03**</td>
<td>.04***</td>
<td>.03**</td>
</tr>
<tr>
<td></td>
<td>Resistance Resource</td>
<td>.25***</td>
<td>.10***</td>
<td>.05***</td>
</tr>
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<td></td>
<td>Trauma x Resistance Resource</td>
<td>.00</td>
<td>.00</td>
<td>.01</td>
</tr>
<tr>
<td>Total Negative</td>
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<td>.14***</td>
<td>.16***</td>
<td></td>
</tr>
<tr>
<td>Resistance Resource</td>
<td>.17***</td>
<td>.06***</td>
<td>.04***</td>
<td></td>
</tr>
<tr>
<td>Total Negative x Resistance Resource</td>
<td>.00</td>
<td>.00</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>TSI-BS Self-Trust</td>
<td>Trauma: Non-Work</td>
<td>.03**</td>
<td>.03**</td>
<td>.03**</td>
</tr>
<tr>
<td></td>
<td>Resistance Resource</td>
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<td>.00</td>
</tr>
<tr>
<td></td>
<td>Trauma x Resistance Resource</td>
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<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>TSI-BS Self-Esteem</td>
<td>Trauma: Non-Work</td>
<td>.02*</td>
<td>.03**</td>
<td>.02*</td>
</tr>
<tr>
<td></td>
<td>Resistance Resource</td>
<td>.09***</td>
<td>.04**</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>Trauma x Resistance Resource</td>
<td>.00</td>
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<td>.00</td>
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<td>Dependent Variable, Predictors, Cross Product Interaction</td>
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<td>Total Negative</td>
<td>.09***</td>
<td>.10***</td>
<td>.08***</td>
<td></td>
</tr>
<tr>
<td>Resistance Resource</td>
<td>.05***</td>
<td>.02*</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Total Negative x Resistance Resource</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td></td>
</tr>
</tbody>
</table>

**TSI-BS Self-Intimacy**

| Total Negative                                           | .04*** | .04**  | .04*** |
| Resistance Resource                                      | .01    | .01    | .02**  |
| Total Negative x Resistance Resource                    | .00    | .01    | .02**  |

**TSI-BS Self-Safety**

| Total Negative                                           | .08*** | .07*** | .08*** |
| Resistance Resource                                      | .07*** | .06*** | .00    |
| Total Negative x Resistance Resource                    | .00    | .01    | .01    |

**Average Runs**

| Total Negative                                           | .03**  | .03**  | .03**  |
| Resistance Resource                                      | .12*** | .06*** | 1***   |
| Total Negative x Resistance Resource                    | .01*   | .01    | .00    |
Table 11 Continued.

<table>
<thead>
<tr>
<th>Dependent Variable, Predictors, Cross Product Interaction</th>
<th>2</th>
<th>R change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
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<tr>
<td>TSI-BS Other-Control</td>
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<td></td>
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<tr>
<td>Total Negative</td>
<td>.11***</td>
<td>.11***</td>
</tr>
<tr>
<td>Resistance Resource</td>
<td>.10***</td>
<td>.03*</td>
</tr>
<tr>
<td>Total Negative x Resistance Resource</td>
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<td>.00</td>
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<tr>
<td>TSI-BS Other-Trust</td>
<td></td>
<td></td>
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<tr>
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<td>.02*</td>
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<tr>
<td>Resistance Resource</td>
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<td>.05***</td>
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<td>.00</td>
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<td></td>
</tr>
<tr>
<td>Total Negative</td>
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<td>.07***</td>
</tr>
<tr>
<td>Resistance Resource</td>
<td>.14***</td>
<td>.03**</td>
</tr>
<tr>
<td>Total Negative x Resistance Resource</td>
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<td>.00</td>
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<tr>
<td>TSI-BS Other-Esteem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Negative</td>
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<td>.06***</td>
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<tr>
<td>Resistance Resource</td>
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<td>Total Negative x Resistance Resource</td>
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Table 11 Continued.

<table>
<thead>
<tr>
<th>Dependent Variable, Predictors, Cross Product Interaction</th>
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<th>3 a.</th>
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<tbody>
<tr>
<td></td>
<td>1</td>
<td></td>
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<tr>
<td>Average Runs</td>
<td>.06***</td>
<td>.07***</td>
<td>.07***</td>
</tr>
<tr>
<td>Resistance Resource</td>
<td>.14***</td>
<td>.08***</td>
<td>.02**</td>
</tr>
<tr>
<td>Runs x Resistance Resource</td>
<td>.00</td>
<td>.00</td>
<td>.01</td>
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</tbody>
</table>

**TSI-BS Other-Intimacy**

| Trauma: Non-Work                                         | .03**          | .04*** | .04**  |
| Resistance Resource                                      | .32***         | .06*** | .01    |
| Trauma x Resistance Resource                             | .01            | .00    | .01    |

| Total Negative                                           | .10***         | .09*** | .11*** |
| Resistance Resource                                      | .25***         | .04*** | .00    |
| Total Negative x Resistance Resource                     | .00            | .00    | .00    |

**TSI-BS Other-Intimacy**

<p>| Average Runs                                             | .04***         | .05*** | .05*** |
| Resistance Resource                                      | .31***         | .05*** | .01    |
| Runs x Resistance Resource                               | .00            | .00    | .01    |</p>
<table>
<thead>
<tr>
<th>Dependent Variable, Predictors, Cross Product Interaction</th>
<th>1</th>
<th>2</th>
<th>3 a.</th>
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</thead>
<tbody>
<tr>
<td><strong>TSI-BS Other-Safety</strong></td>
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<tr>
<td>Total Negative</td>
<td>.09***</td>
<td>.09***</td>
<td>.09***</td>
</tr>
<tr>
<td>Resistance Resource</td>
<td>.02*</td>
<td>.03**</td>
<td>.06***</td>
</tr>
<tr>
<td>Total Negative x Resistance Resource</td>
<td>.00</td>
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<tr>
<td>Work Exposure</td>
<td>.06***</td>
<td>.05***</td>
<td>.05***</td>
</tr>
<tr>
<td>Resistance Resource</td>
<td>.04***</td>
<td>.04***</td>
<td>.09***</td>
</tr>
<tr>
<td>Exposure x Resistance Resource</td>
<td>.00</td>
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</tbody>
</table>

The analyses revealed support for buffering effects of social support, organizational support and hardiness on specific criterion measures. Participant satisfaction with EMS organizational support did have a buffer effect on the relationship between work related exposure to violent trauma and subjective levels of occupational stress. Perceived social support acted as a buffer against the effects of the average number of EMS runs per shift on Self-Safety beliefs. Hardiness buffered the effects of negative life event stress on beliefs about the ability to nurture and comfort oneself (TSI-BS Self-Intimacy). Support for a buffering
effect of organizational support on the relationship between negative life event stress and beliefs about Self-Safety was approaching significance (R² change for total negative x organizational support = .01, p = .06). This was also true for the effect of social support on the relationship between non-work related trauma exposure and the need for intimacy with others (R² change trauma x social support = .01, p = .06).

The change in predicted variance accounted for by the selected trauma exposure/negative life event indices and the three psychosocial resistance resource variables was significant in most of the regressions. Perceived social support and organizational support exhibited main effects for all of the criterion variables, though the results varied depending on which trauma exposure measure was used in the analysis. Social support was the only resistance resource that exhibited a main effect on TSI-BS Self-Trust scores, while hardiness was the only one with a main effect on TSI-BS Self-Intimacy scores. Social support and, to a lesser extent, organizational support had significant direct effects on TSI-BS Other-Intimacy scores, though hardiness did not exert such an effect.

The results of this study failed to support the hypothesis that social support and hardiness are significantly interrelated (r = -.11, ns). Separate
hierarchical multiple regressions were performed in order to test for a significant interaction effect of social support and hardiness (see Table 12). The dependent variables included were occupational stress ratings and the TSI-BS total score. The independent variables entered into the equation were the total number of recent negative life events, work exposure rating to violent trauma, social support total score, hardiness total score, the stress/exposure x resistance resource cross product terms, the support x hardiness and the stress/trauma exposure x support x hardiness cross product term. In no instance was the interaction of social support and hardiness found to be significant. This was also true for the stress/trauma exposure x support x hardiness interaction.
<table>
<thead>
<tr>
<th>Dependent Variable, Predictors, Cross Product Interactions</th>
<th>R change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceived Occupational Stress</strong></td>
<td></td>
</tr>
<tr>
<td>Work Exposure</td>
<td>.17***</td>
</tr>
<tr>
<td>Social Support</td>
<td>.02**</td>
</tr>
<tr>
<td>Hardiness</td>
<td>.00</td>
</tr>
<tr>
<td>Work Exposure x Support</td>
<td>.00</td>
</tr>
<tr>
<td>Work Exposure x Hardiness</td>
<td>.00</td>
</tr>
<tr>
<td>Support x Hardiness</td>
<td>.00</td>
</tr>
<tr>
<td>Work Exposure x Support x Hardiness</td>
<td>.00</td>
</tr>
<tr>
<td><strong>TSI-BS Total Score</strong></td>
<td></td>
</tr>
<tr>
<td>Total Negative</td>
<td>.16***</td>
</tr>
<tr>
<td>Social Support</td>
<td>.17***</td>
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<tr>
<td>Hardiness</td>
<td>.03**</td>
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<tr>
<td>Total Negative x Support</td>
<td>.00</td>
</tr>
<tr>
<td>Total Negative x Hardiness</td>
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<td>Support x Hardiness</td>
<td>.00</td>
</tr>
<tr>
<td>Total Negative x Support x Hardiness</td>
<td>.00</td>
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</tbody>
</table>

Note: Only those variables that accounted for the highest percentage of variance in the selected criterion variables were used as indices of stress/trauma exposure. Work Exposure = Perceived degree of work related exposure to violent trauma. Total Negative = Total number of negative life events. TSI-BS = The Traumatic Stress Institute Belief Scale. * p < .05. ** p < .01. *** p < .001.
Null Hypothesis 1: Urban paramedics do not experience greater occupational stress and indirect exposure to trauma than non-urban paramedics

The first null hypothesis was rejected on the basis of a univariate analysis which compared several groups of paramedics who were grouped according to their primary worksite (Chicago Fire Department, a suburban Cook County fire department, a fire department in a large metropolitan area outside of Cook County, a private ambulance company and, other specialized settings). The participants varied significantly with respect to perceived occupational stress and work exposure to violent trauma. The average ratings (using a 7 point Likert scaling) of occupational stress and work exposure to violent trauma for the total sample were at moderate (i.e., occupational stress = 4.69) to high (i.e., work exposure to trauma = 5.14) levels. Urban paramedics in this sample were exposed to high levels of violent trauma
and disproportionately high levels of occupational stress.

The paramedics who were employed by the Chicago Fire Department responded to a greater number of emergency responses per-shift, experienced greater perceived exposure to the aftermath of human induced violence and, greater perceived occupational stress. The Chicago Fire Department paramedics also had considerably more work experience compared to the paramedics who worked for a fire department outside of Chicago and for a private ambulance company. It is important to note that, with the exception of the private paramedic group, the Chicago Fire Department paramedics reported significantly less satisfaction with organizational supports for coping with work-related stress.

These results are consistent with those reported in previous studies in which high levels of occupational stress among paramedics were documented, particularly those who work in dangerous areas with high rates of violent trauma (Hammer, Mathews Lyons et al., 1986; Cydulka, Lyons, Moy et al., 1989). Despite the heightened risk for significant stress among urban paramedics, the Chicago Fire Department paramedics in this sample perceived the organizational support services available to address this stress as inadequate. This finding is important in light of the documented increased risk for stress responses which can result from the repeated witnessing of extreme events and exposure to violence (Parson, 1994; Hunter, Jenkins, &
The above mentioned results were found to be present when the total sample was partitioned into non-urban and urban groups. However, the urban paramedic group reported a greater number of recent negative life events and a greater number of non-work related traumatic life events experienced than the non-urban group. The magnitude of the statistically significant differences between the two groups on these variables were not large. Therefore, it is unclear whether they are clinically meaningful. These two variables were used in subsequent multivariate analyses as covariates in order to control for these differences between the two groups. Regression analyses indicated that the indices of direct exposure to negative life events, work exposure to trauma and perceived satisfaction with organizational supports independently contributed to the prediction of paramedic stress.

The overwhelming increase in urban violence in Chicago and most large cities in the United States has had significant effects on EMS systems. This increase in violence can affect several factors that are directly associated with occupational stress among emergency medical professionals. Urban paramedics are treating much higher numbers of patients who are the victims of extreme violence which is often senseless and random in nature. Consequently, these emergency medical professionals have
higher rates of secondary trauma exposure, as well as work overload due to increased demands for EMS services. This increase in violence can also have negative effects on organizational support systems. For example, as primary care facilities (e.g., level 1 trauma centers) become overburdened by increased patient loads, paramedics may face increasing challenges interfacing with these facilities. This may result in an erosion of available organizational supports within the primary medical facilities with which paramedics regularly have contact. Urban violence clearly affects several factors which are associated with paramedic stress (e.g., organizational, work over load, risk of personal injury, individual exposure to extreme situations). It is important to consider how these organizational and individual factors interact in order to develop effective stress-reducing interventions (Whitely & Allison, 1989).

Satisfaction with support has been conceptualized as the degree of fit between a person's needs and the degree to which these needs are met by the environment (Brown, Brady, Lent et al., 1987). Urban paramedic's dissatisfaction with organizational supports may be due to perceptions that these support services do not adequately meet their needs. A lack of satisfaction with organizational supports can be a significant source of stress and is a subtle indicator of strain and alienation between administrative and direct care personnel. Unfortunately, these perceptions may decrease
the likelihood that paramedics will access available intervention programs. This finding has important implications because different sources of social support (e.g., organizational supports vs support from family and friends) may have different effects on particular outcomes (Braboy-Jackson, 1992). Therefore, organizational support may have a stronger relationship than perceived support from friends and family with job satisfaction and appraisals of occupational stress.

The results reported above can not be generalized to other EMS organizations. The quality of supports provided by an EMS organization will be associated with differences in the orientation of administrative personnel, the level of awareness and sensitivity to EMS stress, the availability of resources, the level of preparedness for responding to critical incidents and the degree to which different service providers are integrated within an EMS system. The number of Chicago Fire Department paramedics in this study represents only approximately 12 percent of this population. Therefore, these results should be interpreted with some caution because it is unclear whether the participant's responses are representative of the population of Chicago Fire Department paramedics.

Null Hypothesis 2: Urban paramedics do not experience greater disruption of cognitive schemas
involving beliefs about the benevolence of the world, vulnerability, and general frame of reference when compared to non-urban paramedics.

The distribution of scores on the TSI-BS subscales for the total sample indicated the majority of participants did not report major disruption of cognitive schemas. Few participants experienced generalized negative beliefs about themselves or others. Schemas related to self were negatively skewed and with less variation (Self-Trust, Self-Esteem, and Self-Safety). This is particularly significant in light of the fact that, as a total group, this sample of paramedics reported moderate to high secondary exposure to violent trauma and had experienced a variety of extreme events while on the job.

Several factors may account for the finding that paramedics in this sample did not experience significant disruption of self-schemas. These results are consistent with the contention that cognitive schemas are resistant to change. There was more variability in the participant's scores for schemas about the world and others. This suggests that the stressors and secondary trauma exposure associated with emergency medical work are more associated with disruption of these types of schemas. Directly and indirectly experienced traumatic events may have different
effects with respect to the cognitive schemas measured by the TSI-BS. Directly experienced traumatic life events that are perceived as unpredictable, uncontrollable and as a threat to an individual's safety and physical integrity (i.e., rape, childhood sexual abuse, physical abuse, spouse or mate battering, combat, and life threatening illness) would be expected to have a greater probability of producing negative changes in self-schemas. This is consistent with the finding that the extent and severity of PTSD symptoms is greater following direct assault, direct life threat or injury (Resnick, Kilpatrick, Dansky et al., 1993). It is important to consider the nature of traumatic exposure (direct vs indirect) because this may influence the types of cognitive schemas that are affected by these stressors. Further research addressing this hypothesis would help determine if particular types of traumatic events are associated with the development and maintenance of specific traumatic symptoms (Green, 1991).

Other factors can influence the degree to which a person experiences disruption of self-schemas after experiencing trauma. An individual would be more likely to experience negative self-schemas following exposure to trauma if their preexisting self-schemas were negative or unstable (McCann & Pearlman, 1990a). Pre- and post-traumatic experiences that foster a sense of control, mastery and self-worth may limit the extent of disruption in
self-schemas. The positive contributions and skills associated with emergency medical work can foster a sense of mastery, worth, and purpose that promotes the maintenance of positive self-schemas. Environmental factors such as social support received from family, friends, and significant others could also make an individual resistant to negative changes in self-schemas by providing emotional support and affirmation of self-worth. Positive self-schemas are essential for maintaining the confidence, drive and self-efficacy necessary to work effectively as an emergency medical professional. If these self-schemas are disrupted they could decrease resilience to stress and increase the likelihood of experiencing role conflict and work related strain.

It is important to note that a sizeable minority of the paramedics in this study had TSI-BS scores that were in the range of scores obtained by the patient groups in the normative data. This occurred particularly on the TSI-BS subscales that were designed to measure beliefs about others (Other-Trust, Other-Esteem and Other-Intimacy). Twenty six percent of the paramedics had significant concerns with the vulnerability of significant others and perceived the world as less meaningful. Urban paramedics had greater disruption of Other-Trust and Other-Intimacy schemas when compared to a sample of trauma therapists.

The null hypothesis of no differences in the TSI-BS
scores for urban and non-urban paramedics was rejected on the basis of the MANOVA results. The paramedic group with greater secondary exposure to trauma (i.e., urban paramedics) experienced greater disruption of schemas involving beliefs about the benevolence of the world and vulnerability. Urban paramedics had greater total scores for the TSI-BS and could be discriminated from non-urban paramedics on the following TSI-BS subscales: Other-Esteem; Other-Intimacy; Other-Safety; and Self-Safety. In contrast, the two paramedic groups did not differ with respect to beliefs about the meaningfulness of the world. The groups did not have significantly different total scores for the WAS-MOW or the individual components of this scale.

The results reported thus far provide some support for the theories of McCann and Pearlman (1990a) and Janoff-Bulman (1992) who claimed that psychological trauma can result in negative changes in primary assumptions about the world and self. Additionally, the construct of "vicarious traumatization" appears to have utility in describing the psychological effects of secondary trauma exposure among professionals who regularly work with the victims of trauma (McCann & Pearlman, 1990b). Taken together, these results provide some support for the discriminant and convergent validity of the TSI-BS as a measure of the degree of disruption in cognitive schemas among groups with varying levels of traumatic exposure. The results also support the
clinical utility of the two factor structure of the TSI-BS divided into schemas related to self and others.

Several other conclusions can be made from the findings. Secondary trauma exposure has a direct and independent effect on the degree of disruption in cognitive schemata and occupational stress among emergency medical professionals. However, the magnitude of the effects of indirect trauma exposure on cognitive schemata were relatively small. Secondary trauma exposure that involves the repeated witnessing of the aftermath of violence and extreme events has effects on particular types of cognitive schemata. This type of trauma exposure is associated with greater disruption of beliefs about the benevolence of the world and vulnerability, particularly regarding the safety of significant others. Disruption of Other-Safety schemas are also found among law enforcement personnel. Emergency and law enforcement personnel "may have trouble keeping critical events from triggering their own fears for their families" (Sleek, 1993c, p. 30).

Directly experienced trauma that is perceived as unpredictable, uncontrollable, and as a direct threat to one's safety and physical integrity are expected to effect a wider range of schemas about self and others. The toxic effects of secondary trauma exposure are likely to be additive to the effects associated with direct trauma exposure. Several factors may moderate the effects of
trauma exposure. These include the extent and recency of previous direct trauma exposure, coping dispositions, the quality of social support, and the utilization of support services that facilitate the integration of critical incidents.

Null Hypothesis 3: The TSI-BS, WAS-MOW scores and the occupational stress ratings are not significantly correlated with the number of non-work related traumatic events, the number of negative life events, the average number of EMS runs per shift, the level of exposure to the aftermath of violence, hardiness, social support, and organizational support.

Bivariate correlations between the predictor variables and selected criterion variables permitted several conclusions. The following variables were found to be significantly correlated with the TSI-BS total scores: the average EMS runs per shift, work exposure to the aftermath of violence, the number of traumatic life events, satisfaction with organizational support, social support, and hardiness. The magnitude of the correlations for the indices of work related trauma exposure (average EMS runs $r = .22$; work related trauma exposure $r = .20$) and the number of non-work
related traumatic events ($r = .18$) were small but significant. However, the number of recent negative life events was found to have a larger correlation with the TSI-BS total scores ($r = .39$). Recent negative life events accounted for a significantly greater, though modest, amount of variance in the TSI-BS total scores. Perceived satisfaction with social support had the highest correlation ($r = -.51$), indicating a moderately negative relationship with the TSI-BS total scores. The following variables had the strongest correlations with the participants occupational stress ratings: average EMS runs per shift ($r = .35$); work exposure to violent trauma ($r = .41$); and perceived satisfaction with organizational supports ($r = -.40$).

The participant's WAS-MOW scores were not significantly correlated with most of the global indices of indirect and direct trauma exposure used in this study. In contrast to the results for the TSI-BS, hardiness, social support, and organizational support were not associated with beliefs about the meaningfulness of the world. Less than three percent of the variance in the component and the composite scores of the WAS-MOW was accounted for by the predictors. Other social and psychological variables have been found to be related to beliefs about the meaningfulness of the world. Previous studies have found that one of the components of the WAS-MOW (i.e., beliefs about justice) is positively
correlated with a number of variables that were not analyzed in this study. These include cultural factors, locus of control, discrimination and religious beliefs (Furnham, 1992; Whatley, 1993; Lipkus & Siegler, 1993). Cultural factors can contribute to differences in world views involving assumptions concerning causality, personal control, personal responsibility and the meaningfulness of events (Dana, 1993).

The results support the contention that different sources of social support may have different effects on particular outcomes (Cohen & Syme, 1985; Oulette-Kobasa & Puccetti, 1983). Perceived satisfaction with organizational supports had a stronger relationship with participant perceptions of occupational stress. Social support from family, friends and significant others was more strongly associated with the participant's TSI-BS total scores. This highlights the need to assess both of these sources of social support among emergency medical professionals, as each have different relationships with stress and symptoms of strain.

Null Hypothesis 4: The following variables do not independently contribute significantly to the prediction of the TSI-BS scores, WAS-MOW scores, and occupational stress ratings: the number of non-work related traumatic events; the number of negative
life events, the average number of EMS runs per shift; the level of exposure to the aftermath of violence; hardiness; social support; and organizational support.

All of the above mentioned variables, except social support and hardiness, were found to be significant predictors of the participant's occupational stress ratings. Each of the indices of direct and indirect trauma exposure contributed independently to the prediction of occupational stress in this sample of paramedics. Collectively, these variables accounted for 30 percent of the variance in the participant's occupational stress ratings. The measures of work related trauma exposure and work overload collectively accounted for 16 percent of the variance in the stress ratings. The number of recent negative life events also was a significant predictor. The results provide further empirical support for the importance of considering different types and sources of social support. Perceived satisfaction with organizational supports added significantly to the prediction of stress levels among the participants but social support from significant others did not. Furthermore, it is important to recognize that non-work related life event stressors also have a positive relationship with paramedic stress. This has also been
reported in other studies with paramedics which emphasize the importance of non-work related stressors in an employee's attitude and performance at work (Hammer, Jones, Lyons et. al., 1985; Cydulka, Lyons, Moy et al., 1989). The effects of non-work and work related stressors appear to be cumulative.

The two measures of direct trauma exposure (i.e., the number of non-work related traumatic events and the number of recent negative life events) were found to be significant predictors of the TSI-BS total score. Collectively, they accounted for fifteen percent of the variance in the TSI-BS total score. Only one of the measures of work related trauma exposure (i.e., the average number of EMS runs per shift) provided a unique contribution to the prediction of the TSI-BS score. The magnitude of this relationship was quite marginal, accounting for only two percent of the variance. These results are consistent with previous findings that indicated that no more than 15% of the variance in self-report measures of physical and psychological well being is typically accounted for by negative life events (Smith, Smoll, & Ptacek, 1990). Twenty three percent of the variance in the participant's TSI-BS total scores were accounted for by the three psychosocial resistance resources (i.e., hardiness, social support, and organizational support). Social support from family and significant others accounted for the largest proportion of
this variance (sixteen percent). Forty percent of the variance in the participant's TSI-BS total scores was accounted for by the above mentioned predictors. While this finding is substantial, it also indicates that other unmeasured variables contribute to the prediction of the disruption of cognitive schemata.

An examination of the predictors of the individual TSI-BS subscales provided further empirical support for the hypothesis that directly experienced negative life events have a greater probability of producing negative changes in self-schemas. Only directly experienced negative life events were significant predictors of four of the five TSI-BS subscales involving beliefs pertaining to the self (Self-Trust, Self-Esteem, Self Intimacy, and Self-Control). Collectively, the two indices of direct exposure to negative life events accounted for less than 10% of the variance in the scores for these subscales. The restriction in range and the skewed distribution of scores for these TSI-BS subscales may have contributed to the relatively small magnitude of the correlations between these variables (Edwards, 1984; McClelland & Judd, 1993). The four TSI-BS subscales that were predicted by the measures of direct and indirect exposure were also found to discriminate between the non-urban and urban paramedic groups (Other-Esteem, Other-Intimacy, Other Safety, and Self-Safety).

The percentage of variance explained by the selected
predictors for each of the TSI-BS subscales was below thirty percent for nine of the ten subscales. Thirty-nine percent of the variance in the scores for the Other-Intimacy subscale were accounted for by the predictors. Perceived satisfaction with social support accounted for the largest proportion of the variance with this subscale (e.g., twenty-four percent). Perceived social support was a significant independent predictor for nine of the ten TSI-BS subscales. Taken together, these findings provide support for the hypothesis that social support is an important variable that has a significant negative relationship with many of the cognitive schemata measured by the TSI-BS, particularly Other-Trust and Other-Intimacy schemas.

Hardiness was a significant predictor of the TSI-BS Self and Other-Control subscales. This finding is understandable in light of the fact that control beliefs are one of the components of hardiness. Hardiness also independently contributed to the prediction of the TSI-BS Self-Intimacy and Other-Safety scores. However, hardiness was not related to the participant's perceptions of occupational stress. A plausible interpretation of this finding is that hardiness does not affect the appraisal of extreme stressors that would be distressing to most individuals.

The utility of the selected measures of stress and resistance resources to predict disruption of cognitive
schemata varied significantly depending on which TSI-BS subscale was used as a criterion. Much of the variance in the self-schemas was not accounted for by the selected predictors. This was particularly true for the Self-Trust and Self-Intimacy subscales. The measurement problems noted previously (i.e., restriction of range and asymmetric distribution of scores) could have contributed to this finding. These results again highlight the importance of maintaining positive self-schemas in order to work effectively as an emergency medical professional. Self-schemas are resistant to change even after repeated secondary exposure to extreme events. The data suggests that negative changes in self-schemas may be a warning sign for a more severe form of vicarious traumatization which could have negative effects on occupational and/or psychological adjustment.

Null Hypothesis 5: There will be no statistically significant interaction between the measures of trauma exposure and perceived satisfaction with EMS organizational supports, social support, and hardiness, as they relate to TSI-BS scores and occupational stress ratings.

The three psychosocial resistance resources
(satisfaction with organizational support, social support, and hardiness) exerted direct effects on most of the TSI-BS subscales. Perceived satisfaction with social support and organizational supports exhibited main effects on all of the TSI-BS subscales except the Self-Intimacy subscale. However, these results varied depending on which trauma exposure measure was used in the analysis. There was empirical support for the buffering hypothesis for each of the three resistance resources on specific outcome measures. Perceived satisfaction with EMS organizational supports buffered the negative effect of work exposure to violent trauma on subjective levels of occupational stress. Perceived social support buffered the negative effects of secondary trauma exposure, as measured by the average number of EMS runs per shift, on beliefs about self-safety. Hardiness buffered the effects of negative life event stress on Self-Intimacy schemas (i.e., beliefs regarding the ability to nurture, comfort and soothe oneself). Evidence for a buffering effect of social support on self-intimacy schemas was also approaching significance.

These results suggest that the above mentioned resistance resources may ameliorate the negative effects of EMS stress. Each appears to have moderating effects on specific aspects of functioning. Interventions that increase the availability and perceived satisfaction with EMS organizational supports will have beneficial effects on
occupational stress levels among paramedics. Increasing the social support received from family and significant others can have beneficial effects on perceptions of vulnerability and levels of interpersonal intimacy. Increasing hardiness may promote positive coping by maintaining beliefs about the ability to soothe and nurture oneself, as well as modulate the emotional responses to stressful life events (i.e., Self-Intimacy). This is important for facilitating the emotional control and internal resources necessary to respond adaptively to EMS stressors.

The psychosocial resistance resource variables used in this study are particularly relevant to EMS personnel because they exhibited a moderating effect on the psychological sequela associated with secondary trauma exposure. These resistance resources also have direct effects on most of the cognitive schemas measured by the TSI-BS. Interventions designed to facilitate positive changes with these variables may result in positive changes in schemas related to the self and others. This could increase resistance among paramedics to EMS stress and also may have beneficial effects on their interactions with co-workers, significant others, and patients. This is important in light of the fact that EMS personnel with greater levels of occupational stress experience greater conflict with co-workers, greater organizational stress, and more negative patient attitudes (Hammer, Matthews, Lyons &
It is important to note that the amount of variance in the criterion measures accounted for by the interaction terms in the hierarchical regression analyses was small (i.e., less than 3%). Although this would suggest that the moderator effects for these variables are not meaningful, there are several statistical considerations that support the opposite conclusion (see McClelland & Judd, 1993; Hills & Norvell, 1991). The restriction of range and the skewed distributions for several of the variables in this study could have resulted in decreased variance for the predictor and criterion variables. This can also result in a decrease of the residual variances for the interaction terms which would decrease the power to detect moderator effects for the selected predictors. The distributions of predictors in non-experimental psychological studies frequently have these undesirable statistical properties. Under these circumstances if an interaction is detected, the decrease in the variation of the dependent variable attributable to the interaction is small. The interactions detected in non-experimental psychological studies typically account for only about 1% - 3% of the variance in the dependent variables (McClelland & Judd, 1993). That is to say that interactions that explain as little as 1% of the total variance may be considered meaningful. In light of these statistical considerations, the interactions obtained in
this study are considered significant despite the small magnitude of effects associated with them. Given the large sample size used in the regression analyses and the number of analyses performed, external replication of these results is recommended in order to determine if the results are reliable.

Discussion of The Unhypothesized Findings

Many of the participants provided written responses to an unstructured question regarding their beliefs about what would be most helpful to reduce work related stress among paramedics (see Appendix C). It is recognized that these responses are limited and are perhaps best suited to an informal qualitative interpretation. However, a review of these responses does allow for a post hoc grouping of content themes that appear to be worthy of systematic analysis. These themes are consistent with the existing literature regarding interventions for stress reduction and trauma therapy for individuals exposed to extreme stressors (Mitchell, 1983 & 1988; Catherall, 1992; Galloucis & Kaufman, 1988; Sleek, 1993, a, b, & c).

Many of the paramedic respondents said that a proactive and preventive stance towards EMS stress was very important to them. A recognition and awareness of EMS stress, particularly among supervisors and administrators, is considered necessary to promote a social milieu in which
paramedics and other EMS personnel will feel safe to access supports. A number of respondents said that there should be increased availability of stress management seminars (during EMT training and with periodic seminars offered by employers) and supportive interventions that provide emotional support. Those respondents who participated in a critical incident stress debriefing generally claimed that this had been a positive experience that should be easier to access. This finding is considered to be important because it was perceived as preferable if critical incidents are processed as soon as possible after the event.

An important identified issue was the need to decrease negative perceptions associated with seeking assistance for work stress. While the "macho" image that some paramedics maintain as a distancing coping strategy can be adaptive in some circumstances, this was perceived by some respondents as detrimental if it was used to an extreme. This could prevent a paramedic from being aware of their own stress responses and may make it less likely that they would seek assistance. Fears that involvement in support activities will be perceived by co-workers and administrators as a sign of weakness or as jeopardizing job status can also prevent EMS personnel from accessing these supports. Another factor which can influence a paramedic's decision to utilize EAP or other counseling services is the extent to which counselors are perceived as being knowledgeable about EMS work and "the
realities of the street". Given these concerns, it is recommended that mental health professionals working with this population should have an EMS background or have experience in the treatment of traumatic stress.

The majority of paramedics in this sample held views similar to other trauma groups in that they preferred to discuss their work stress with individuals who have experienced similar kinds of extreme situations. Not surprisingly, informal supportive contacts with co-workers and peer support groups were perceived as beneficial activities. Given the demonstrated beneficial effects of "rap groups" with other trauma groups, the availability of peer support groups would appear to be a particularly beneficial resource for EMS personnel (Galloucis & Kaufman, 1988; Sleek, 1993a; Raphael & Wilson, 1994). These types of support groups facilitate the expression of repressed affect, increase a sense of universality and trust among participants, help normalize the emotional responses of EMS personnel, as well as providing a social context in which individuals can process and integrate extreme events that are experienced on the job.

The most frequently used coping activities of the respondents involved exercise, hobbies, or other distracting activities and informal supportive contacts with co-workers. Surprisingly, only 23% had participated in at least one stress seminar and only 9% had participated in a peer
support group. This finding is consistent with the perceptions of many respondents regarding a need for greater availability of these two interventions. Individual counseling and employee assistance programs were underutilized by most of the respondents. This is likely due, in part, to the factors that were discussed earlier.

Negative perceptions of supervisory and administrative personnel was a consistent theme expressed by many participants. This theme is also supported by the empirical data in this study that indicated the paramedics who worked for the Chicago Fire Department or a private ambulance company perceived their organizational supports as inadequate. These organizational stressors can contribute to low morale, alienation and increased risk for burnout.

A number of participants felt that administrators were "out of touch" with the daily stressors experienced by EMS personnel. The perception among some participants that administrative personnel had high expectations for work productivity but were reluctant to acknowledge paramedic's role stressors is a source of frustration. Several of the participant's responses are presented below to highlight these concerns:

* "Better attitude of administration toward the bureau of EMS".

* "Management to fully understand the job and address the problems".
* "Chiefs and/or employers are quite often not in touch with today's responsibilities".

* "More support from management. More respect for the stress involved in our job by the Chief and Village administration. More importance on employee moral and less importance on productivity".

* "Primarily- acknowledgment from the Department that we have a stressful job".

* "If most of the top staff come from the EMT-P program. Most of them have not seen an ambulance for 10 or 20 years".

* "An attitude by the department suggesting they believe stress accompanies our job as paramedics. Merely acknowledging this fact would have me feel better about my employer".

* "More support from the administration of the Department. They seem to forget or don't know what goes on in the street".

* "Just for upper management to realize that some calls are more stressful and that stress builds on itself".

A systematic examination of this qualitative data set suggests a need for educational interventions to increase awareness and knowledge among EMS administrative personnel about EMS stress. Some supervisory and administrative personnel may still believe that few emergency workers experience psychological disruption as a result of their
work. The fact that almost one third of the sample for this study had participated in a critical incident stress debriefing indicates that there probably has been some increase in awareness regarding the need for supportive interventions following critical events. However, administrators may be less aware of the cumulative stress associated with a paramedic's daily duties. This is due, in part, to the paucity of empirical studies on the psychological impact of non-disaster related events among emergency workers (Genest et al., 1990). Supervisors and administrators who do not work directly with patients may not be aware of the potential impact of the repeated exposure to violent trauma that many paramedics experience. Individual and organizational countertransference reactions can also foster attitudes and behaviors which promote inadequate proactive interventions for traumatic stress in the workplace.

Empathic strain and countertransference reactions within an organization can negatively affect how traumatic stress in the work place is responded to (Wilson & Lindy, 1994). Organizations that are indifferent towards efforts to increase the availability of supports for EMS providers may not recognize the significance of trauma exposure. Additionally, if EMS supervisors assume that vicarious traumatization is simply part of a paramedic's job, they may not remain alert to the impact of especially intense moments
of vicarious traumatization (Dunning, 1994). Emergency medical supervisors and administrators can exhibit countertransference reactions towards traumatized workers that involve counterphobic avoidance, distancing, and detachment. If these responses are repeatedly utilized as a defense style, the resulting empathic strain can invalidate EMS workers stress and experiences. Denial, disbelief, avoidance, and intellectualization may be used in an effort to preserve a world view involving beliefs about justice and the meaningfulness of the world (Wilson, Lindy & Raphael, 1994). These types of responses are more likely to occur if the extreme experiences of EMS personnel triggers memories and affects associated with a supervisor's previous traumatic experiences. These psychological factors can contribute to negative responses of administrators and supervisors to EMS related stress. They can be minimized by efforts to increase knowledge about trauma and awareness of the personal factors that can contribute to an individual's emotional responses to work trauma (Wilson, Lindy & Raphael, 1994).

The last theme involved the work factors that were perceived to be associated with stress and burnout among paramedics. The most obvious recommendation to reduce EMS stress was to limit the workload experienced during each shift and to limit the extent of sustained exposure to work trauma. Some of the respondents felt that EMS personnel who
work in high volume neighborhoods with high rates of violence should be regularly rotated to less intense work areas. Another way to limit sustained exposure to high stress situations would be to change the 24 hour shift rotation system that is utilized by some EMS organizations. Crosstraining firefighters to become certified as EMT-P's was also seen by some, particularly those respondents who worked for the Chicago Fire Department, as a necessary step to decrease the burnout rate of paramedics. This would have the beneficial effect of decreasing the number of calls that EMS personnel would be responsible for and decreasing the extent to which paramedics respond to high stress situations during a shift.

Conclusions

The primary conclusions of the study are presented below.

(1) The results provide initial support for the discriminant and convergent validity of the Traumatic Stress Institute Belief Scale as a measure of disruption in cognitive schemata.

(2) The majority of the paramedics in this sample did not experience significant disruption in their cognitive schemas about the world, themselves, or others. This finding was unexpected given their significant degree of exposure to extreme events.

(3) A relatively small but significant percentage of the
sample did experience negative changes in their cognitive schemas that were similar, on average, to the mean TSI-BS scores of patient groups. One fourth of the sample reported perceiving the world as less meaningful. This subgroup tends to perceive events as more random, more due to chance factors, and less controllable.

(4) Paramedics who experienced greater indirect EMS related trauma exposure due to working in an urban environment did, on average, experience greater disruption of particular types of cognitive schemas. These involve beliefs about the benevolence of the world and vulnerability. Beliefs associated with perceptions of the unique vulnerability of significant others to future harm or loss are particularly sensitive to disruption among paramedics.

(5) EMS related trauma exposure has a direct and independent effect on the degree of disruption in cognitive schemas. The magnitude of these affects appear to be relatively small, in comparison to the effects of recent, directly experienced traumatic or negative life events.

(6) Self-schemas are particularly resistant to disruption among EMS personnel, despite the repeated indirect exposure to extreme events that is associated with this type of work. Personally experienced negative life
events were found to have a greater negative impact on self-schemas. In the absence of recent personal traumatic life events, disruptions of self-schemas may be a warning sign of a more serious form of vicarious traumatization among EMS personnel.

(7) The indices of direct and indirect EMS related trauma exposure contributed independently towards the prediction of the TSI-BS scores. Both direct and indirect trauma exposure are associated with the disruption of cognitive schemata regarding self and others. Direct trauma exposure, in this sample, was particularly associated with disrupted schemata regarding the self. The number of recent negative life events, the number of nonwork related traumatic life events, and perceived social support accounted for the most variance in the TSI-BS scores.

(8) At least 60% of the total variance in the TSI-BS scores was unaccounted for by the predictors used in the study. This finding suggests that other psychological variables contribute to the prediction of the disruption of cognitive schemas assessed by the TSI-BS. Measurement error in the assessment of trauma exposure among the participants probably contributed to the relatively small predictive power of the global indices of trauma exposure used in this study.

(9) Each of the three psychosocial resistance resource
variables exhibited moderating effects on the psychological sequela associated with EMS stress. Perceived satisfaction with organizational supports buffered the negative effect of work exposure to violent trauma on subjective levels of occupational stress. Perceived support buffered the negative effects of EMS related indirect trauma exposure on beliefs about personal vulnerability. Hardiness buffered the effects of negative life event stress on beliefs regarding the ability to comfort and soothe oneself. Each of these three psychosocial resistance resource variables also exhibited direct effects for most of the TSI-BS subscales.

(10) Paramedics who work in urban areas may lack appropriate administrative and supervisory supports to address the stress associated with EMS work. Greater recognition by administrative personnel of the potential effects of repeated exposure to extreme stressors may be facilitated by efforts to increase knowledge about trauma and to identify organizational countertransference reactions to work trauma.

(11) Emergency medical personnel will be more inclined to access support services in the workplace if the stigma associated with seeking help is removed and a proactive stance towards stress management is adopted by EMS organizations. Greater availability of critical
incident stress debriefings, peer support groups, clinicians with training in the area of traumatic stress and periodic stress management seminars would be beneficial. Strategies for limiting prolonged exposure to extreme situations should include consideration of rotating EMT-P's from high volume and high crime areas, as well as changing the 24 hour shift rotation system in these areas.

The majority of the paramedics in this sample did not experience significant disruption in their cognitive schemas despite significant exposure to extreme events. This finding was unexpected given the level of experience and significant trauma exposure of the group. Several factors may account for these results. Overall, the results support the contention that preexisting, positive cognitive schemas about self and the world are resistant to change. This is consistent with the hypothesis that individuals are inclined to minimize disruption to their assumptive beliefs, in order to minimize the impact of stressful life events (Janoff-Bulman, 1992; Swartzberg & Janoff-Bulman, 1991; McCann & Pearlman, 1990a, b). Cognitive adaptation to threatening and extreme events may not necessarily involve perceptions or beliefs that are congruent with one's experience or environmental events. Psychologically healthy individuals may be inclined to maintain overly optimistic beliefs in the face of extreme stress. For example, many people have been
found to have overly positive views of themselves, their ability to affect change in the environment and their future (Taylor & Brown, 1988). A significant body of research supports the notion that "positive illusions" about self and the world, as well as illusory perceptions of control, can promote psychological well-being (Taylor & Brown, 1994; Friedland, Keinland & Regev, 1992). These can buffer the negative effects of stressors by providing meaning, facilitating a sense of mastery, and promoting self esteem (Taylor, 1983). Collectively, these findings highlight the potential benefit of maintaining positive assumptions and core beliefs in the face of threatening or negative experiences.

It is important to gain a better understanding of the factors that account for individual differences in the level of disruption of cognitive schemas about self and the world. The results of this study suggest that the nature and extent of trauma exposure, the quality of existing social supports and personality factors contribute independently to the prediction of these cognitive schemata. The extent of disruption of schemas among the paramedics in this study was associated with the number of recently experienced negative life events, the number of traumatic life events, greater EMS related indirect trauma exposure, and less satisfaction with social supports.

The characteristics of EMS related trauma exposure may
influence psychological adjustment. These stressors can be extreme and are usually repeatedly experienced by EMS personnel. However, they usually are indirectly experienced by paramedics. They are also not entirely unexpected. Therefore, some of the coping strategies utilized by EMS personnel (e.g., distancing strategies, emotional numbing, intellectualization, the necessary focusing on the technical aspects of their work, and humor) may provide some buffer against the negative effects of repeated work exposure to trauma. For example, Fitzpatrick (1993) has discussed how individuals who are chronically exposed to violence and trauma may develop coping strategies that insulate them from external stimuli and are less affected by these experiences.

The majority of the paramedics in this study perceived their social supports as favorable and exhibited a hardy personality style. It has been postulated that individuals with these types of psychosocial resources are prone to make optimistic retrospective appraisals of traumatic experiences (Bartone, Ursano, Wright et al., 1989). Additionally, a significant number of the participants reported using a variety of resources (e.g., CISD, religious activities, ongoing informal supports with co-workers, and peer support groups) to help them cope with work stress. These factors may have affected the participant's appraisal of work trauma, as well as helping them to process and derive.
meaning out of these events. This could result in a healthy accommodation of work trauma into pre-existing cognitive schemas about the world.

The results suggest that clinically significant numbers of EMS personnel may, at some point, become "vicariously traumatized" as a result of the repeated exposure to extreme events that are associated with this type of work. Paramedics working in high crime, urban areas with a high volume of emergency responses that involve violent trauma's are at greater risk for adverse psychological outcomes. This risk is increased if the individual also has recently experienced negative life events and if their social support is perceived as inadequate. Administrators and supervisors of EMS personnel, as well as mental health professionals, should be sensitized to the psychological consequences that are associated with the daily duties of this work. This will hopefully increase the availability of support services that address the ongoing and chronic stressors of EMS work, not just the psychological distress that results from critical incidents. This would also help remove the stigma that is sometimes felt by these professionals when they seek out supports. Psychoeducational interventions that promote the control of physiological reactions, that enhance skills to influence others, and that increase self awareness can reduce stress levels among EMS personnel (Kagan, Kagan &
Watson, 1995). Psychological interventions for EMS personnel should also address how EMS related trauma exposure can negatively affect core beliefs about others and the world.

**Limitations of The Study**

Several methodological issues deserve comment. The results of this study are based on self-report measures and, therefore, possess the measurement weaknesses associated with this method of data collection. The reactive properties of self-report measures can result in response sets that can lead to spurious findings of "illusory mental health" (Shedler, Mayman & Manis, 1994). Psychological defenses such as defensive denial of distress or socially undesirable beliefs may distort self-report data (Shedler, Mayman & Manis, 1993). Health care professionals and other groups of "helpers" may be prone to defensive responding on these types of psychological measures. This is due to concerns about the perceived incompatibility of affirmative responses with their professional roles or theoretical orientation.

It is unlikely that the results of this study are primarily due to defensive denial. There was empirical support for theoretically postulated variables that are hypothesized to influence the disruption of cognitive schemata about the world. It is also unlikely that the
large number of paramedics in this study without disrupted cognitive schemas could be accounted for solely by a subset of individuals who engaged in the defensive denial of distress. However, the demonstrated strength of the relationship between the selected predictor variables and the TSI-BS and WAS-MOW scores could be increased if the confounding effects of defensive self reporting on these measures is controlled (Joiner, 1994).

The measurement of many of the outcome variables in this study via self-report was appropriate due to the "latent" nature of these variables. Several of the predictor and criterion variables are subjective phenomena (e.g., perceived social support, perceived satisfaction with organizational support, and the measures of cognitive schemas) that are difficult to assess in a way that is independent of self-report and the biases that can accompany this measurement mode. A self-report measure of social support was used because subjective measures of social support have been reported to predict psychological outcome variables better than more objective indices (Hobfoll, Nadler & Leiberman, 1986; Cohen & Wills, 1985).

The 30% response rate is less than optimal to ensure the generalizability of the results but is not uncommonly found with large mailings of survey questionnaires. Additionally, this response rate is not unusual given the historical resistance of health care providers to
participate in psychologically oriented research. Examination of the characteristics of the sample indicates that the participants possessed a range of work experiences, work responsibilities, and duration of employment as emergency medical professionals. The random selection of subjects for this study does increase the probability of the representativeness of the sample. However, due to the self-selection of the sample, it is impossible to determine with certainty whether the paramedics who did not respond differed in some important ways from the participants.

There were also some limitations associated with the methods used to measure the degree of trauma exposure among the participants. Separate indices of direct trauma exposure and indirect work related trauma exposure were used in order to analyze their independent effects on cognitive schemas. Frequency counts of the number of traumatic and recent negative life events were used as direct trauma indices. However, no information was obtained regarding the subjective effects of the events that were experienced by a respondent. This type of distress measure is considered a useful component of objective trauma exposure indices, as well as the assessment of trauma-related variables including the age when the first incident of the event was experienced, estimates of how frequently each event was experienced, duration of time since the event was experienced, and the experience of fear of death or physical
There are currently no available measures of EMS related indirect trauma exposure. Two indices of EMS related indirect trauma exposure were used in this study (i.e., average number of EMS runs per shift and ratings of the degree of work exposure to violent trauma). These are considered global indices of indirect trauma exposure and may be imprecise. For example, they fail to assess for specific types of events (e.g., recent onsite involvement in a disaster with many deaths and injuries and/or responding to the violent trauma of a child) and event characteristics that are associated with EMS trauma exposure (e.g., feeling that one's actions contributed to the death of a patient, perception of risk for injury or death, and/or perceived controllability of the outcome of an emergency) that may influence psychological outcomes. The moderate correlation between these two indices suggests that, although there is some redundancy in what they measure, they do appear to assess independent aspects of indirect trauma exposure (i.e., the rate of EMS calls each shift and the degree of exposure to violent trauma). The measures of direct and indirect trauma exposure utilized in this study may have exhibited greater predictive power of the criterion measures if these factors were addressed.

The data from this study was collected at a single
point in time and is cross-sectional in nature. Additionally, some of the results are based on regression analyses. The causality of variables, the direction of effects of the variables, as well as the mechanisms of action by which the resistance resource variables achieved a beneficial effect could not be assessed. The results do indicate important associations between indices of trauma exposure and stress resistance factors on the TSI-BS composite and subscale scores. They do not indicate the direction of effects for the variables. The hypothesis that traumatic life events have direct effects on cognitive schemas is a reasonable deduction given that it would be difficult to demonstrate that disruptions of cognitive schemas could cause the occurrence of traumatic life events. However, it is possible that traumatic life events or chronic stressors may affect other intervening variables, such as social support, that are directly responsible for disrupted cognitive schemas. It is also possible that negative or traumatic life events and disrupted cognitive schemas about self and others may interact in a mutually causal manner.

This model emphasizes the reciprocity of the causal influences for these variables. The occurrence of traumatic life events could make an individual more vulnerable to disrupted cognitive schemas about the world and self. Disrupted cognitive schemas could, in turn, make an
individual more likely to encounter negative life events by influencing his or her psychosocial adjustment and engagement in high risk behaviors. Similarly, traumatic life events, particularly those that occur early in life during the formation of stable attachments with others, could cause disrupted cognitive schemas about self and others. This could negatively affect one's social interactions and increase the probability of experiencing inadequate social support. This lack of social support could, in turn, foster the maintenance of the negative schemas about self or others and increase one's vulnerability to psychological strain. This example highlights how disrupted cognitive schemas may exert a reciprocal effect on stress resistance factors. Prospective or longitudinal research designs would be necessary to document the cause-effect relationships among the selected predictor and outcome variables in this study.

**Recommendations for Further Research**

Given the findings reported above, several directions for future research can be suggested. First, continued efforts to validate the TSI-BS and WAS should enable us to determine whether these instruments are influenced by social desirability response sets, defensive responding common to self report measures, negative mood states and whether they are strongly correlated with measures of maladjustment.
This is important given the apparent transparency of the content of many of the items comprising these scales. Some occupational groups (e.g., health care professionals) may be reluctant to positively endorse items on these measures because the items may be perceived to be inconsistent with their professional role as "helpers".

There is a need to better understand when scores on the TSI-BS and the WAS are reflective of clinically significant disruptions of cognitive schemas. Minor changes in particular cognitive schemas (i.e., those involving beliefs about safety and other trust or esteem), as indicated by lower scores on these measures, may be adaptive by increasing vigilance and proactive coping behaviors. Disruption of cognitive schemata in these instances are presumed to reflect the traumatic experiences and are based on the reality of a paramedic's experience, rather than reflecting significant psychopathology (Dutton, Burghardt, Perrin et al., 1994). Higher scores are presumed to reflect greater maladaptive and extreme accommodations of trauma relevant information into existing schemas about the world (e.g., beliefs such as "I can't ever be safe" or "I can't trust anyone") that may predispose an individual to adjustment problems. This research question would be addressed by identifying the affective, behavioral, and interpersonal correlates of the TSI-BS and WAS scores, as well as determining their relationship to indices of
psychological adjustment. For example, individuals with significant elevations on the TSI-BS Other-Trust and Other-Esteem scales are more likely to experience problems in several interpersonal areas, such as hostility, dominance, resentfulness, vindictiveness and less feelings toward others (Gurtman, 1992).

Future studies should also be designed to determine whether the TSI-BS and WAS are useful for predicting groups who are at increased risk for the development of PTSD symptomatology following trauma exposure. Are disruption of particular cognitive schemata associated with the onset, maintenance and severity of particular clusters of PTSD symptoms? For example, are individuals with severely disrupted safety schemas more likely to experience hypervigilance, anxiety, intrusive, and hyperarousal symptoms? The cognitive schemata measured by the TSI-BS have been found to be associated with global and specific symptoms of PTSD among a sample of victims of domestic violence (Dutton, Burghardt, & Perrin et al., 1994).

If the above mentioned hypothesis is supported it may be possible to implement specific therapeutic interventions that promote positive changes in particular cognitive schemas. These changes could, in turn, promote the reduction of specific PTSD symptoms. Psychotherapeutic approaches that facilitate the cognitive processing of a traumatic event by identifying and modifying conflicts
between prior schemata and trauma relevant information can ameliorate symptoms of PTSD and depression (Resick & Schnicke, 1992).

Conceptual models of traumatic stress will be enhanced by the identification of the factors that lead some individuals to maintain their assumptive worlds after repeated exposure to extreme events. This would provide valuable insight regarding what factors may contribute to the assimilation of trauma related information into preexisting schemata and which factors may contribute to an adaptive accommodation of the trauma into preexisting world views. Factors related to the subjective meaning of traumatic events such as cognitive appraisals, causal attributions, and maladaptive beliefs associated with a traumatic event may influence an individuals adaptation to negative life events (Resick & Schnicke, 1992; Dutton, Burghardt, Perrin et al., 1994). Religion is also a variable that is positively related to cognitive processing and finding meaning to particular kinds of trauma (e.g., loss of a loved one) (McIntosh, Cohen-Silver, & Wortman, 1993). This can foster a hopeful orientation and connection with the world that helps promote the maintenance of positive schemas about self and the world. Social support also is an important factor that appears to be related to the maintenance of positive schemas about the self and others. These factors can prevent the loss of meaning,
connection and faith which often follows repeated trauma exposure (Pearlman & Saakvitne, in press).

This study was exploratory in nature. The results should be cross validated on other groups of emergency medical professionals. Prospective studies and statistical analyses such as path analysis are recommended to determine the direction of effects for the structural relationship between social support and the cognitive schemata measured by the TSI-BS. The finding that perceived social support was significantly related to several TSI-BS subscales (particularly the Other-Trust and Other Intimacy scales) is similar to what has been reported in several other studies (Sarason, Pierce, & Shearin et al., 1991; Lakey & Bennett-Cassady, 1990; Hobfoll, Nadler & Leiberman, 1986; Markus, Smith & Moreland, 1985; Sarason, Sarason & Shearin, 1986; Carnelley, Pietromonaco & Jaffe, 1994). The magnitude of the correlations between the measure of perceived social support and the cognitive measures used in this study are similar to what was reported by Lakey and Bennett-Cassady (1990). In their study the magnitude of the correlation between perceived support and three cognitive personality variables ranged from .40 to .51. The strength of the association between perceived support and symptoms of psychological distress was substantially reduced when the cognitive personality variables were controlled.

These studies suggest an interaction between
interpersonal and intrapersonal processes in perceived social support. Perceptions of social support are associated with "working models" (i.e., schemata) of self and others. Negative perceptions of social support may be closely connected with a negative world view and may not simply reflect only actual enacted support. Personal factors, such as existing schemata about self and others, may have a direct effect on a person's perceptions of social support and interpersonal patterns (Horowitz, 1991). Further research examining the relationship between perceived social support and the cognitive schemas measured by the TSI-BS will improve existing conceptual models of social support. This will make it possible to investigate whether particular schemas measured by the TSI-BS and the WAS are mediators of the effects of social support on mental health. The outcome of this research will promote refined understanding regarding the interplay between personality and social processes.
APPENDIX A

PARTIAL REVIEW OF STUDIES INVESTIGATING

THE SHORT-TERM PSYCHOLOGICAL EFFECTS OF DISASTER WORK

ON RESCUE AND EMERGENCY PERSONNEL
Partial Review of Studies Investigating the Short-Term Psychological Effects of Disaster Work on Rescue and Emergency Personnel

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Assessment Method</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lindstrom &amp; Lundin 1982</td>
<td>144 rescue and health personnel</td>
<td>Questionnaire and interview. Immediately after the event.</td>
</tr>
<tr>
<td>Taylor &amp; Frazer 1982</td>
<td>180 rescue and body identification personnel</td>
<td>Symptom checklist, observer rating scales, interview and questionnaire. Immediately, 3 and 20 months after the event.</td>
</tr>
<tr>
<td>Wilkinson 1983</td>
<td>102 victims and rescue workers</td>
<td>Semi-structured interview of DSM-III PTSD symptoms. Within 5 months after the event.</td>
</tr>
<tr>
<td>Miles, Demi &amp; Mostyn-Aker 1984</td>
<td>54 fire and medical personnel</td>
<td>Symptom checklist, health and disaster questionnaire. Four months after the event.</td>
</tr>
<tr>
<td>Durham, McCammon &amp; Allison 1985</td>
<td>79 rescue, fire, police and medical personnel</td>
<td>Questionnaire listing DSM-III PTSD symptoms. Five months after the event.</td>
</tr>
<tr>
<td>Jones 1985</td>
<td>225 U.S. Airforce personnel involved in the identification and transportation of</td>
<td>Questionnaire assessing feelings before and several months following a mass suicide. No assessment for PTSD symptoms.</td>
</tr>
<tr>
<td>Subjects</td>
<td>Assessment Method</td>
<td>Results</td>
</tr>
<tr>
<td>-------------------------------</td>
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<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Mitchell 1985</td>
<td>Questionnaire</td>
<td>87% reported being emotionally and physically affected by their work. 23% reported feeling &quot;burned out&quot;.</td>
</tr>
<tr>
<td>360 emergency workers including firefighters, police, paramedics and nurses</td>
<td></td>
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</tr>
<tr>
<td>Duckworth 1986</td>
<td>Questionnaire</td>
<td>24% experienced serious symptoms of distress including: frequent guilt, anxiety, irritability and motivational changes.</td>
</tr>
<tr>
<td>234 police officers</td>
<td></td>
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</tbody>
</table>
APPENDIX B

COVER LETTER AND QUESTIONNAIRE
September 20, 1993

Dear Emergency Medical Professional,

I am a doctoral candidate in counseling psychology at Loyola University of Chicago. My interest involves the study of traumatic stress. Consequently, I have become sensitized to the extreme stressors and demands associated with your work.

I have designed a study that concerns the personal impact of emergency medical work among paramedics. The information obtained from this study will assist in the development of programs that will address the needs of emergency medical professionals and the stressors associated with your work. Your name was randomly selected from a published listing of certified emergency medical technicians (EMT-P's) registered in Illinois. Your participation would be an invaluable contribution to this project. It will contribute to a better understanding of the personal impact of emergency medical work, as well as highlight the ways in which emergency medical personnel cope with work related stressors. This research would also counter the historically minimal attention to the stressors encountered by healthcare professionals involved in the provision of emergency services.

Every precaution has been taken to make it safe for you to be candid. Because of the sensitive nature of this topic, special precautions have been taken to insure the confidentiality and anonymity of your responses. First, this study was approved by the Institutional Review Board of Loyola University as meeting ethical guidelines for the conduct of research with human subjects. Secondly, reports of this study will not identify you in any way. Since only code numbers are used to identify your response sheet, confidentiality of your responses is protected. The completed questionnaires will only be handled by the primary investigator. Thirdly, no arrangements have been made to
share the results with any government agency, fire
department, hospital or private ambulance company. After
the study is completed, I would be happy to send you an
abstract of the results of the study.

**I need your help in this endeavor.** It is very important
that you respond so that the results are representative of a
large number of paramedics. Your participation will be
invaluable in helping me investigate important aspects of
your work not previously researched. Please complete the
questionnaire, follow the instructions, and mail it in the
enclosed, addressed envelope no later than **October 6, 1993**.

Thank you for your important contribution and assistance in
developing research relevant to you and your colleagues!

Sincerely,

Matthew Galloucis, M.S.
Doctoral Candidate
Counseling Psychology

Manny S. Silverman, Ph.D.
Professor and Dissertation
Director
Emergency Medical Technician (EMT-P) Survey

The majority of the questionnaires are brief. Please complete them in the order they are presented and follow the directions provided for each one. Remember that the confidentiality of your responses is guaranteed in order to make it safe for you to be candid.

Thank you very much for your valuable contribution to this study!
DEMOGRAPHICS QUESTIONNAIRE

Please circle the appropriate number or fill in the blanks to describe relevant characteristics about yourself and your job.

1. Age: ____________

2. Gender: 1-Male 2-Female

3. Race:
   1-African American 2-Caucasian/White 3-Hispanic 4-Asian 5-Other(Specify) ____________

4. Marital Status:
   1-Married 2-Single 3-Living with partner or in a long-term committed relationship 4-Separated 5-Divorced 6-Widowed

5. Are you currently employed as an emergency medical technician (EMT)?
   1-Yes 2-No

If you answered "no", then go to item 17.

If you answered "yes", then proceed to item 6 and continue on.

6. Are you currently employed as an emergency medical technician (EMT) on a full or part-time basis?
   1-Full-time 2-Part-time
7. How long have you been employed as an emergency medical technician (EMT)? Indicate the total number of years and months you have been employed as an EMT.

Examples: 2 Years and 6 Months
           0 Years and 8 Months

           Years and __________ Months

8. Circle the number which best describes where you currently work:

   1-Chicago Fire Department       2-Suburban Cook County Fire Department
   3-Other Fire Department(Please Specify) __________
   4-Private Ambulance Company     5-Hospital
   6-Other(Specify) __________

9. Do you work primarily in the city of Chicago?

   1-Yes        2-No

10. Indicate your current primary job responsibilities (circle the number of the appropriate response).

    1-Direct Patient Care ("In The Field")
    2-Direct Patient Care Primarily In a Hospital Setting
    3-Supervisory/Administrative With Some Regular Direct Patient Contact
    4-Supervisory/Administrative Without Any Direct Patient Contact

11. What is the average number of ambulance calls you respond to each shift?

    __________
12. What is the **average** number of hours you work each shift?


13. Overall, **how stressful** do you perceive your work as an emergency medical professional to be? Circle the number which best reflects the level of stress associated with your work.

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<tr>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not At All</td>
<td>Moderately</td>
<td>Extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stressful</td>
<td>Stressful</td>
<td>Stressful</td>
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</tbody>
</table>

14. Rate the overall degree of exposure you experience in the course of your work to the aftermath of human induced violence and abuse present in our society.

<table>
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<tr>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Exposure</td>
<td>Moderate</td>
<td>Extremely High</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure</td>
<td>Exposure</td>
<td>Exposure</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

15. Are you a combat veteran or have you ever worked as support personnel in a military combat zone?

1-Yes  
2-No

16. Rate how **satisfied** you are with the resources offered to emergency medical professionals to assist in coping with work related stress.

<table>
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<tr>
<th>1</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not At All</td>
<td>Moderately</td>
<td>Extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfied</td>
<td>Satisfied</td>
<td>Satisfied</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

17. Answer this question only if you responded "No" to item 5. **How long ago were you last employed** as an emergency medical technician (EMT)? Indicate the number of years and months since you were last employed as an EMT.

Examples: 4 Years and 6 Months Ago  
0 Years and 9 Months Ago

_______ Years and ___________ Months Ago
All respondents should answer the remaining questions and complete parts A through E.

16. Which types of activities have you ever participated in to try to cope with the stress of your work as an emergency medical technician? Check all the items listed below that apply.

___ Critical Incident Stress Debriefing

___ Employee Assistance Program

___ Peer Support Groups

___ Department Sponsored Seminars on Stress Management

___ Individual Counseling

___ Alcoholics Anonymous/Cocaine Anonymous etc.

___ Informal Supportive Contacts With Co-Workers

___ Exercise or athletics

___ Church or religious related activities.

___ Hobbies

List any other things you do (or did) which help (or helped) you to cope with the stress of your work as an EMT:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

************** GO TO THE NEXT PAGE **************
19. What do you believe would be most useful for assisting emergency medical professionals to cope with work related stress?

---

**PART A**

Listed below are a number of events which sometimes bring about change in the lives of those who experience them and which require readjustment. Please respond to only those events which you have experienced in the last 12 months. If you have not experienced an event in the last 12 months, leave that item blank.

For each item you have experienced, please indicate the extent to which you viewed the event as having either a positive or negative impact on your life. Place a check mark in the space designated "positive" or "negative" depending on the impact it had on your life.

<table>
<thead>
<tr>
<th>Impact of Event</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Death of spouse or lover</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>2. Divorce</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>3. Separation from mate or lover due to conflict</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>4. Serious legal problems</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>5. Death of a close family member</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>6. Death of a close friend</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>Event</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>7. Major personal injury or illness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Marriage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Reconciliation with spouse or mate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Change in health of family member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Pregnancy (yourself or mate)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Sexual difficulties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Gaining a new family member (e.g. through birth, adoption or a</td>
<td></td>
<td></td>
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<tr>
<td>disabled family member moving in)</td>
<td></td>
<td></td>
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<tr>
<td>14. Borrowing more than $10,000 (buying a home, business, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Major change in financial status (a lot better or a lot worse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>off)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Changed work situation (different work responsibility, major</td>
<td></td>
<td></td>
</tr>
<tr>
<td>change in working conditions, hours etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. New Job</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Major change in number of arguments with mate or spouse (a lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>more or a lot less arguments)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Foreclosure on a mortgage or loan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Listed below are a number of highly stressful events. We would like to know which of the following types of events you may have experienced anytime in your life. First, indicate whether you have ever experienced each event by placing a check mark in the appropriate space to the left of the item. Secondly, for all the events you have experienced—indicate whether you experienced the event as a result of your work as an emergency medical professional by placing a check mark in the appropriate space to the right of the item.

<table>
<thead>
<tr>
<th>Event</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>20. Major change in closeness of family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Son or daughter leaving home</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Outstanding personal achievement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Begin or end school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Spouse beginning or stopping work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Change in living conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Change in residence</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PART B**

<table>
<thead>
<tr>
<th>Event</th>
<th>Experienced As An Emergency Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personally affected by war or holocaust.</td>
<td></td>
</tr>
<tr>
<td>Experienced a natural or human-induced disaster (e.g., fire, flooding, tornado, airplane crash, etc..).</td>
<td></td>
</tr>
<tr>
<td>Involved in a serious accident (e.g., automobile, fire, plane crash) in which either you or others suffered serious physical injury.</td>
<td></td>
</tr>
<tr>
<td>Saw dead or dying people as a result of a disaster or serious accident.</td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td>Experienced a physical or emotional loss of a significant other. Circle those that apply: parent/caretaker, child, partner or spouse.</td>
<td></td>
</tr>
<tr>
<td>Experienced a life threatening illness or injury.</td>
<td></td>
</tr>
<tr>
<td>A close family member was diagnosed with a life threatening illness.</td>
<td></td>
</tr>
<tr>
<td>Observed emotional abuse of another person.</td>
<td></td>
</tr>
<tr>
<td>Personally experienced domestic violence, neglect or physical abuse.</td>
<td></td>
</tr>
<tr>
<td>Personally experienced emotional abuse.</td>
<td></td>
</tr>
<tr>
<td>Observed sexual abuse or rape of another person.</td>
<td></td>
</tr>
<tr>
<td>Personally experienced sexual abuse as a child (under age 18).</td>
<td></td>
</tr>
<tr>
<td>Personally experienced sexual abuse as an adult (Age 18 or older).</td>
<td></td>
</tr>
<tr>
<td>Observed criminal activity other than rape, such as murder, assault or mugging.</td>
<td></td>
</tr>
<tr>
<td>Personally experienced criminal activity other than rape which was psychologically or emotionally harmful.</td>
<td></td>
</tr>
<tr>
<td>A parent/loved one/caretaker was the victim of a violent crime (e.g., rape, mugging, assault etc..)</td>
<td></td>
</tr>
<tr>
<td>Felt responsible for the serious injury or death of another person in a non-war related situation.</td>
<td></td>
</tr>
</tbody>
</table>
Experienced As
An Emergency
Medical Professional

Heard about or witnessed the
after-effects of physically and/or
emotionally abusive events or experiences
of others.

PART C

This questionnaire is used to learn how individuals view
themselves and others. Please place next to each item the number
from the scale below which you feel most closely matches your
own beliefs about yourself and your world. Try to complete
every item.

1. I generally feel safe from danger.

2. People are wonderful.

3. I wish the people I know best were more open with their
   feelings.

4. I can comfort myself when I am in pain.

5. I find myself worrying a lot about my safety.

6. I don’t feel like I deserve much.

7. I can usually trust my own judgement.

8. I feel empty when I am alone.

9. I have a lot of bad feelings about myself.

10. I’m reasonably comfortable about the safety of those
    I care about.

11. Most people destroy what they build.

12. I have a difficult time being myself around other
    people.
|   | 1. Even when others do foolish things, I don't think badly of them. | 2. I enjoy my own company. | 3. I don't trust my own instincts. | 4. I often think the worst of others. | 5. I believe I can protect myself if my thoughts become self-destructive. | 6. You can't trust anyone. | 7. I'm uncomfortable when someone else is leading the group. | 8. I feel good about myself most days. | 9. Sometimes I think I'm more concerned about the safety of others than they are. | 10. Other people are no good. | 11. Sometimes when I'm with people, I feel disconnected. | 12. People shouldn't place too much trust in their friends. | 13. Mostly, I don't feel like I'm worth much. | 14. I don't have much control in my relationships. | 15. My capacity to harm myself scares me sometimes. | 16. For the most part, I like other people. | 17. I deserve to have good things happen to me. | 18. I usually feel safe when I'm alone. |
| 1. Disagree strongly |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2. Disagree somewhat |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3. Disagree more than agree |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4. Agree more than disagree |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5. Agree somewhat |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6. Agree strongly |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
1. If I really need them, people will come through for me.

2. I can't stand to be alone.

3. The world is filled with emotionally disturbed people.

4. I am basically a good person.

5. For the most part, I can protect myself from harm.

6. Things work out best when I'm in charge of others.

7. Bad things happen to me because I'm bad.

8. Most people are decent, if you give them a chance.

9. Some of my happiest experiences involve other people.

10. People have the right to their opinions.

11. There are many people to whom I feel close and connected.

12. Sometimes I'm afraid of what I might do myself.

13. I am often involved in conflicts with other people.

14. I often feel cut off and distant from other people.

15. I worry a lot about the safety of loved ones.

16. When I criticize others, I try not to damage their self-esteem.

17. I don't experience much love from anyone.

18. Even when I'm with other people, I feel alone.
<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree strongly</td>
<td>Disagree somewhat</td>
<td>Disagree more than agree</td>
<td>Agree more than disagree</td>
<td>Agree somewhat</td>
<td>Agree strongly</td>
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</tbody>
</table>

49. There is an evil force inside of me.
50. I feel uncertain about my ability to make decisions.
51. People shouldn't give in to their feelings.
52. Most bosses I've worked for know less than I do.
53. When I'm alone, I don't feel safe.
54. When I'm alone, it's like there's no one there.
55. I can depend on my friends to be there when I need them.
56. Sometimes I feel like I can't control myself.
57. I feel out of touch with people.
58. Most people are basically good at heart.
59. I sometimes wish I didn't have any feelings.
60. I'm often afraid I will harm myself.
61. I am my own best friend.
62. I often feel helpless in my relationships with others.
63. I don't have a lot of respect for the people closest to me.
64. I enjoy feeling like part of the community.
65. I look forward to time I spend alone.
66. I often feel others are trying to control me.
67. I envy people who are always in control.
<table>
<thead>
<tr>
<th></th>
<th>Agree strongly</th>
<th>Agree somewhat</th>
<th>Agree more than agree</th>
<th>Agree more than disagree</th>
<th>Disagree somewhat</th>
<th>Disagree strongly</th>
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<tbody>
<tr>
<td>68.</td>
<td>The important people in my life are relatively free from danger.</td>
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<tr>
<td>69.</td>
<td>The most uncomfortable feeling for me is losing control of myself.</td>
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<tr>
<td>70.</td>
<td>If people really knew me, they wouldn't like me.</td>
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<tr>
<td>71.</td>
<td>Most people don't keep the promises they make.</td>
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<tr>
<td>72.</td>
<td>Strong people don't need to ask for others' help.</td>
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<td>73.</td>
<td>Trusting other people is generally not very smart.</td>
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<td>74.</td>
<td>People are very cruel at times.</td>
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<tr>
<td>75.</td>
<td>I feel bad about myself when I need others' help.</td>
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<tr>
<td>76.</td>
<td>To feel at ease, I need to be in charge.</td>
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<td>77.</td>
<td>I have sound judgement.</td>
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<td>78.</td>
<td>People who trust too much are foolish.</td>
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<tr>
<td>79.</td>
<td>When my loved ones aren't with me, I fear they may be in danger.</td>
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<tr>
<td>80.</td>
<td>I feel confident in my decision-making ability.</td>
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<td>81.</td>
<td>I can't work effectively unless I'm the leader.</td>
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<tr>
<td>82.</td>
<td>People make life difficult.</td>
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<td>83.</td>
<td>I often doubt myself.</td>
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<tr>
<td>84.</td>
<td>I can usually size up situations pretty well.</td>
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<td>85.</td>
<td>I generally don't believe the things people tell me.</td>
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<td></td>
<td>Disagree strongly</td>
<td>Disagree somewhat</td>
<td>Disagree more than agree</td>
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<td>Agree somewhat</td>
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<tr>
<td>86</td>
<td>When someone suggests I relax, I feel anxious.</td>
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<td>87</td>
<td>Misfortune is least likely to strike worthy, decent people.</td>
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<td>88</td>
<td>Bad events are distributed to people at random.</td>
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<tr>
<td>89</td>
<td>People's misfortunes result from mistakes they make.</td>
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<tr>
<td>90</td>
<td>Generally, people deserve what they get in this world.</td>
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<tr>
<td>91</td>
<td>The course of our lives is largely determined by chance.</td>
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<tr>
<td>92</td>
<td>By and large, good people get what they deserve in this world.</td>
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<tr>
<td>93</td>
<td>Through our actions we can prevent bad things from happening to us.</td>
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<tr>
<td>94</td>
<td>In general, life is mostly a gamble.</td>
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<tr>
<td>95</td>
<td>When bad things happen, it is typically because people have not taken the necessary actions to protect themselves.</td>
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<tr>
<td>96</td>
<td>People will experience good fortune if they themselves are good.</td>
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<tr>
<td>97</td>
<td>Life is too full of uncertainties that are determined by chance.</td>
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<tr>
<td>98</td>
<td>If people took preventive actions, most misfortune could be avoided.</td>
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********** GO TO THE NEXT PAGE **********
This questionnaire contains statements describing the support received from other people. For each item use the rating scale to determine the extent to which you agree or disagree with each statement, in terms of your relationships. Place next to each item the number from the rating scale which you feel most closely matches your own beliefs regarding your relationships. Please complete each item.

<table>
<thead>
<tr>
<th></th>
<th>Disagree strongly</th>
<th>Disagree somewhat</th>
<th>Neutral</th>
<th>Agree somewhat</th>
<th>Agree more than</th>
<th>Agree strongly</th>
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<tbody>
<tr>
<td>1</td>
<td>There is a special person who is around when I am in need.</td>
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<td>2</td>
<td>There is a special person with whom I can share my joys and sorrows.</td>
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<tr>
<td>3</td>
<td>My family really tries to help me.</td>
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<td>4</td>
<td>I get the emotional help and support I need from my family.</td>
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<tr>
<td>5</td>
<td>I have a special person who is a real source of comfort for me.</td>
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<tr>
<td>6</td>
<td>My friends really try to help me.</td>
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<tr>
<td>7</td>
<td>I can count on my friends when things go wrong.</td>
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<tr>
<td>8</td>
<td>I can talk about my problems with my family.</td>
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<tr>
<td>9</td>
<td>I have friends with whom I can share my joys and sorrows.</td>
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<tr>
<td>10</td>
<td>There is a special person in my life who cares about my feelings.</td>
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<tr>
<td>11</td>
<td>My family is willing to help me make decisions.</td>
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<tr>
<td>12</td>
<td>I can talk about my problems with my friends.</td>
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</table>
PART E

Below are some statements that you may agree or disagree with. Use the rating scale below to indicate how you feel about each item. Circle the number to the right of each item which best reflect your response. A one (1) indicates that you feel the item is not at all true; circling a four (4) means that you feel the item is completely true.

Please read all the items carefully. Be sure to answer all on the basis of the way you feel now. Don't spend too much time on any one item.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>Not At All True</td>
<td>A Little True</td>
<td>Quite A Bit True</td>
<td>Completely True</td>
</tr>
</tbody>
</table>

1. Most of my life gets spent doing things that are worthwhile. 1 2 3 4

2. Planning ahead can help avoid most future problems. 1 2 3 4

3. Trying hard doesn't pay, since things still don't turn out right. 1 2 3 4

4. No matter how hard I try, my efforts usually accomplish nothing. 1 2 3 4

5. I don't like to make changes in my everyday schedule. 1 2 3 4

6. The "tried and true" ways are always best. 1 2 3 4

7. Working hard doesn't matter, since only the bosses profit by it. 1 2 3 4

8. By working hard you can always achieve your goals. 1 2 3 4

9. Most working people are just manipulated by their bosses. 1 2 3 4

10. Most of what happens in life is just meant to be. 1 2 3 4

11. It's usually impossible for me to change things at work. 1 2 3 4
<table>
<thead>
<tr>
<th></th>
<th>Not At All True</th>
<th>A Little True</th>
<th>Quite A Bit True</th>
<th>Completely True</th>
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<tbody>
<tr>
<td>12.</td>
<td>New laws should never hurt a person's paycheck.</td>
<td>1 2 3 4</td>
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<tr>
<td>13.</td>
<td>When I make plans, I'm certain I can make them work.</td>
<td>1 2 3 4</td>
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<tr>
<td>14.</td>
<td>It's very hard for me to change a friend's mind about something.</td>
<td>1 2 3 4</td>
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<tr>
<td>15.</td>
<td>It's exciting to learn something about myself.</td>
<td>1 2 3 4</td>
<td></td>
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<tr>
<td>16.</td>
<td>People who never change their minds usually have good judgment.</td>
<td>1 2 3 4</td>
<td></td>
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</tr>
<tr>
<td>17.</td>
<td>I really look forward to my work.</td>
<td>1 2 3 4</td>
<td></td>
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<tr>
<td>18.</td>
<td>Politicians run our lives.</td>
<td>1 2 3 4</td>
<td></td>
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<tr>
<td>19.</td>
<td>If I'm working on a difficult task, I know when to seek help.</td>
<td>1 2 3 4</td>
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<tr>
<td>20.</td>
<td>I won't answer a question until I'm really sure I understand it.</td>
<td>1 2 3 4</td>
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<tr>
<td>21.</td>
<td>I like a lot of variety in my work.</td>
<td>1 2 3 4</td>
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<tr>
<td>22.</td>
<td>Most of the time, people listen carefully to what I say.</td>
<td>1 2 3 4</td>
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<tr>
<td>23.</td>
<td>Daydreams are more exciting than reality for me.</td>
<td>1 2 3 4</td>
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<tr>
<td>24.</td>
<td>Thinking of yourself as a free person just leads to frustration.</td>
<td>1 2 3 4</td>
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<tr>
<td>25.</td>
<td>Trying your best at work really pays off in the end.</td>
<td>1 2 3 4</td>
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<tr>
<td>26.</td>
<td>My mistakes are usually very difficult to correct.</td>
<td>1 2 3 4</td>
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<tr>
<td>27.</td>
<td>It bothers me when my daily routine gets interrupted.</td>
<td>1 2 3 4</td>
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</table>
21. It's best to handle most problems by just not thinking of them.

22. Most good athletes and leaders are born, not made.

23. I often wake up eager to take up my life wherever it left off.

24. Lots of times, I don't really know my own mind.

25. I respect rules because they guide me.

26. I like it when things are uncertain or unpredictable.

27. I can't do much to prevent it if someone wants to harm me.

28. People who do their best should get full support from society.

29. Changes in routine are interesting to me.

30. People who believe in individuality are only kidding themselves.

31. I have no use for theories that are not closely tied to facts.

32. Most days, life is really interesting and exciting for me.

33. I want to be sure someone will take care of me when I'm old.

34. It's hard to imagine anyone getting excited about working.

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<tbody>
<tr>
<td>Not At All True</td>
<td>A Little True</td>
<td>Quite A Bit True</td>
<td>Completely True</td>
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</table>

42. What happens to me tomorrow depends on what I do today.  
43. If someone gets angry at me, it's usually no fault of mine.  
44. It's hard to believe people who say their work helps society.  
45. Ordinary work is just too boring to be worth doing.

Place a check mark here if you would like a summary of the results of this study mailed to you at a later date.

Please use the enclosed stamped, self-addressed envelope to return the questionnaire.

Return to: Matthew Galloucis  
P.O. Box 310
APPENDIX C

PARTICIPANT RESPONSES TO ITEM 19

OF THE QUESTIONNAIRE
Participant Responses to Item 19 of the Questionnaire

Note: These are the participant's written responses to the following question: What do you believe would be most useful for assisting emergency medical professionals to cope with work related stress?

* Talking over a call with the other people on the ambulance and others not involved, to get an objective opinion.
* More seminars on stress management.
* Support from job/PMD's.
* Stress debriefings.
* On very critical runs, a period of 1-2 hours afterwards "to catch your breath" would be nice, instead of getting another run.
* I think the CISD team is good.
* Mandatory monthly counseling.
* Obtain adequate rest and eat nutritiously. Exercise regularly. If needed-counseling.
* Going into some other profession-short of doing this having support from one's employer-which is a major stressor. And one's spouse-who is another major stressor.
* 1) Strong Christian faith, 2) good relationships with coworkers and, 3) counseling available if needed.
* First understanding that stress exists. Second being able to recognize when they are stressed out-then doing something about it. In my case it would be more helpful to have more professional people to talk to-who deal with stress related problems.
* CISD.
* Have the support of the administration.
* Paramedics should be taught it is ok to display a little emotion every once in a while. Try not to bottle things up or try to grow callous to all the death and violence we see. Stress management should be part of the paramedic training.
* Less talk and more action from those that can affect change and are in positions of power. As individuals one rule applies: If you're not a part of the answer, you're part of the problem.
* Better attitude of administration toward the bureau of EMS. Double standard for firemen vs. paramedics. Competent counselors in EAP. More stress debriefing. More ambulances-CFD responded to over 219,000 calls last year-EMS related!
* More department supported activities to help with stress.
* Peer support groups with a professional counselor as a "leader".
* 1) More general stress awareness, 2) stress debriefing on a regular basis, perhaps two times a year, rather than waiting for a "critical incident", 3) involve our spouses in awareness/debriefing and, 4) mechanism to follow-up on patients, so we know that we did some good.
* Maybe a reevaluation of the 24 hour shift should be considered. Getting "pounded" for 24 hours straight can break just about anyone.
* Management to fully understand the job and address the problems.
* Immediate debriefing/counseling when necessary.
* 1) A 1-800 number where people could use the phone instead of having to deal with more pressure of getting to a meeting. But you never know which reporter or informant is listening. 2) Mandatory meetings which are good for continuing education.
* Stress management classes. Firefighters should take their wives to these classes.
* We have way to many bosses on the Chicago Fire Department!
* CISD and EAP are offered in most places. In my city it isn't horrible, but in Chicago I feel the paramedics are under supervisory stress. For the most part it is unnecessary. My answer would be for supervisors to back off on subordinate scrutiny.
* Counseling and EAP.
* To be able to talk to someone who's been in the field, that can understand and be able to give guidance without repercussions of Department management or politics.
* Mandatory stress management sessions with counselors who themselves are experienced, well respected EMS personnel. Medics are notorious for not asking for help-sometimes it needs to be demanded.
* CISD was great when losing a very close friend and co-worker to a traumatic death in the line of duty. Need to have a strong belief system (Religion) to see you through the bad times.
* If any "high stress" situations arise, they should be handled immediately at the receiving hospital.
* Instead of having medics go for help, help should go to them on a regular basis. For example, once a month put a rig out of service for an informal hour or two with a crisis worker. If this was mandatory no one would feel like they're singled out, and they could talk whether they think they need it or not.
* Every 3 or 6 months have a one-on-one with an EMS stress counselor and every 6 months a group rap session. As long as any findings with a counselor doesn't jeopardize my job or anyone else's.
* Group sessions.
* Peer group support. "Start a paramedics anonymous!"
* 1) A comprehensive exercise program mandated by the Department.
   2) Easy access to professionals, to whom you could talk to. Often after an incident when CISD is contacted it takes time to gather the resources.
* Availability of stress reducing activities/programs (i.e., some fire departments don't allow working out on duty due to liability reasons).
* Remove prejudice against EMT-P's who ask for counseling. Also, Chiefs and/or employers are quite often "not in touch with today's responsibilities". Most relate to the 1950's "grab em and run" philosophy.
* Critique the event and the action taken at the event as soon as possible afterwards. Allow each member their input. Formulate a "next time" plan.
* More support from management. More respect for the stress involved in our job by the fire chief and village administration. More importance put on employee moral and less importance on productivity.
* You need to have somebody to talk to, and this person to understand you. I still consider being humorous on certain occasions to get it off my mind. Talk to a loved one that will understand it.
* Primarily-acknowledgment from the Department that we do have a stressful job (more so than firefighter), that we are human and emotions are a part of us and, therefore, part of our job. Secondly, peer counseling groups under the guidance of a trained professional.
* 1) Off of 24 hour shifts, 2) one person in charge not hospital, fire and supervisor etc., 3) rotation of paramedics in high violence areas to get a break and, 4) most important-new management officers trained with degrees in management.
* I believe that what is needed is for EMS people to open up more and not try to be more macho about what happens on the street. One way that helps me is to laugh and open up on bad incidents.
* CISD is used only when the individual requests. No supervisor ever suspects a stress overload and suggests it. It is used too seldom.
* 1) Have 911 calls screened much better, 2) more ambulances in the city to reduce runs, 3) shorten work hours and, 4) tell top brass to lighten up on petty complaints—we should work together not against each other.
* I would have to say less work load is most important than more help (i.e., 3 men ambulance) and more pay.
* Regular individual and group sessions offered on a regular basis thru employer.
* Getting time off ambulances from time to time.
1) informal sessions, 2) regularly scheduled Departmental meetings, 3) CISD for special situations.

- Rotate personnel on and off apparatus.
- To stop the current test procedures for recertification and have better continuing education, 2) stress management classes.
- In the case of the Chicago Fire Department paramedics, it would help if the Department distributed the work out evenly. We have 10% of the manpower and we do 80% of the work. All EMS/Fire Department personnel should be cross trained! It is more economical, better services to the city and prevents burnout!
- Critical incident stress debriefings for major traumatic experiences.

Regular exercise and open discussions of feelings for "every day" stress.

- Higher pay so you don't have to work so many hours to make a living wage. Make ER staff do our job. They would be less likely to criticize with "should have" or "could have".
- Talking with co-workers or people who have experienced the same work related stress-formal or informal.
- In any aggressive situation, to become the aggressor and maintain control.
- Have the hospitals ease up. Help more than being condescending.
- More/easier availability to use CISD without worrying how others will feel.
- Job knowledge. I feel the more automatic you are to the given situation you just react to the situation. When you are not familiar with how to deal with a situation then the job is not "another call" but instead stressful or overwhelming (i.e., your first PEDS arrest or trauma).
- Seminars on stress.
- If more of the top staff come from the EMT-P program. Most of them have not seen an ambulance for 10 to 20 years.
- Peer groups should be more available. Employers should stop judging the possible need for counseling as a sign of weakness.
- Reduce the workload (more ambulances) or reduce the hours of a shift.
- Better work relations with ER and hospital staff. The public also needs to be educated on our roles in the EMS field. I don't feel EMS personnel are respected by ER (hospital) staff because they are more educated than paramedics. The public abuses the EMS system and they don't understand our jobs.
- Much of the stress, as I see it, stems from the imbalance of leadership. Many people intend to remember the daily stressors that dealing with "John Q. Public" brings but tend to forget the little things. I understand the need for rules and regulations but in this business-people dealing with people in any type of situation-the balance is constantly changing.
* Better education at entry level—we still expect most patient-related learning to be self-motivated through experience.
* Rotating medics from busy districts and ambulances to slower ambulances. Currently only the top 10 busy ambulances get a relief day.
* What works for me may not work for someone else. I feel exercise and communication is of great help.
* Department sponsored stress debriefings. Also chiefs and department heads think that stress management is part of the resource EMS hospital’s responsibility.
* Incident stress debriefings (not just for critical incidents).
* Public knowledge of your abilities and responsibilities to eliminate the "ambulance driver" perception. This would give us the respect we need to do our job and not have to explain what we are doing to every idiot out there.
* More money for fewer hours.
* More support from superiors and less emphasis on proper "uniform" wear-driving around watching your every move to "try and catch" you doing something wrong!
* Bosses/supervisors who understand the stress of the job itself and help reduce the technical job type aspects. Stop all the little nitpicking.
* By teaching "trainees" or EMT students that stress will occur, and that someone would not and should not be looked down on because they asked for assistance coping with stress from the job or from personal life.
* I think that regular stress debriefing as well as regular seminars on the recognition of stress and solutions to deal with stress would be useful.
* Rotation from high volume ambulance to low volume ambulance.
* Reduce the amount of stress related situations as possible.
* More time off of the job. More fire house activities for health and fitness.
* Run relief program works ok. Cross training would also help to change or alter job description.
* Prevention. Better prepare students of the type of work that they will be involved in.
* Talking with family, friends and co-workers in an informal atmosphere.
* There will always be immense stress in this field. It can not be avoided. Dealing with it is an individualistic thing. One must learn to deal with it on his own.
* Periodic debriefings in a small group setting.
* An attitude by the department suggesting they believe stress accompanies our job as paramedics. Merely acknowledging this fact would have me feel better about my employer.
* Less than 24 hour shifts. Our superiors need some intense sensitivity training and interpersonal skills. Charge all patients who use ambulances as taxis.
* Never take your job home with you.
* More frequent continuing education on stress management.
* Positive mental attitude enhancement.
* Informal stress debriefing with co-workers.
* Regular exercise programs, hobbies and CISD for severe cases.
* Some sort of support group might be helpful but I would think that usually EMT’S would not make use of this until they have become "totally stressed out".
* Eliminate unnecessary stress-mechanical problems, ie brakes, inferior radios, keying mike while responding starts the door back down etc..
* Crisis team or group debriefing.
* Programs that are in conjunction with E.R. personnel.
* Concern and understanding from superiors who work behind a desk and have not worked the field in years.
* More support from the administration of the Department. They seem to forget or don't know what goes on in the street.
* Constant reminder of services available either outside the agency or within.
* Good working relationships with fellow employees and hospital staff.
* Talking about the call as soon as possible after the call.
* CISD is good but I also think talking with co-workers does a lot of good.
* Chicago utilizing a cross training program so that there is a variation to your work routine and a greater chance for promotion. Most of our bosses in EMS are young and there are very few slots often for promotion.
* Exercise and informal support with co-workers.
* More debriefings after serious incidents.
* Feedback on call performance or call review within the Department or hospital.
* Do something totally different from EMS. Get into hobbies or your family. Don't take your job home with you.
* 1) acknowledgment that these problems exist, 2) slight adjustment of macho cowboy image of paramedics, 3) encouraging informal peer supports.
* Time off with family and friends.
* Rotating ambulances from busy to slow two times a month. Support groups.
* Counseling and stress management seminars. More understanding of management.
* A stress education program that explains stress and its signs and symptoms. Also have an ongoing program teaching about how to relieve stress. The program should teach as many different ways as possible so that EMT'S can find a reliever that suits them. Supervisors need to go through the same programs to prevent stress problems before they occur.
* Peer support groups.
* Post incident debriefing with follow up.
* Have somebody available, strictly to EMS personnel, upon arrival to the emergency room to give positive reinforcement. Someone to say "you did a good job" or "how are you feeling about this". Many times once we have arrived at the hospital, we are pushed aside and forgotten or ignored. A little recognition helps deal with the call.
* To have employers become more sensitive to employees emotions and feelings.
* There isn't anything I know of more helpful than a strong belief in God and real support from family and friends.
* Time dedicated to nothing but low stress activities which also involve physical activity away from the EMS environment.
To be given a change of duty away from ambulance service so one can experience a break (time off). To hear "you did a good job" more often from fellow workers and hospital staff.

The best way to cope with work related stress is to talk with your co-workers because they know the problems you deal with. Don't bring your problems home with you and don't bring your personal problems to work.

Teach stress reducing activities in paramedic class. Mandated groups involving open discussion among EMS personnel with psychology professional (i.e., once a month).

Church and religious related activities. Exercise and hobbies. Informal support groups.

More understanding supervisors, Department heads etc. Private company owners only concern is money not you or anyone's well being.

Activity like a summer camp for paramedics to get away from the big cities and get themselves back to nature.

Critiques and exercise.

Get away from work environment to relax.


Peer associated gatherings.

Different assignments on the job that didn't involve EMS from time to time. More time off.

1) Realize that stress does exist and we are not above it or superhuman, 2) CISD program, and, 3) meet with a counselor once a year to determine your stress level.

The stronger a person is as an individual the better performance he (or she) will achieve. A good foundation of life itself. A strong inner self. Know where you stand with God. Programs dealing with the above matters.

In the Chicago Fire Department to share the amount of work equally. Medics are running constantly, under pressure Departmental, resource hospital policy and IDHP (Illinois Dept. of Public Health) wise. With cross training stress and physical work would be reduced for all.

Rotation of ambulance assignments. Stress debriefing. Group or individual therapy.

MD's and RN's expect paramedics to be perfect which is a big responsibility and nobody is perfect. So, perhaps very informal meetings with doctors and nurses could be helpful, to better understand expectations of each other.

Getting away from the stressors for a period of time.

Understanding of these pressures by those in authority.

Exercise and counseling.

Being able to confide in a friend or co-worker that understands emergency medical work or has worked as an EMT and is able to comprehend the stress involved.

Time away from EMS and rotating shifts.

More information on how stress manifests itself so that it can be identified. Then more stress seminars focussing on interventions-hands on not just talking.

Less work hours. More input to operations of the company you work for.

Moral support-you feel like your all alone out there.
* Set up programs in individual departments. Most privates and departments have already.
* Regularly given other assignments other than ambulances like ride engines or ladder trucks.
* Maybe an 800 number when you really get down. But usually just talking with other on job firemen and paramedics is sufficient.
* A program developed by CFD, with trained professionals running it.
* Review of number of hours per shift. Establishment of an employee assistance program.
* Places where paramedics can talk.
* I think that the informal meetings with co-workers has been most beneficial.
* We have found activities with other departments we work closely with helpful. You also find everybody gets along better after you get to know each other away from the work environment.
* To have available to them an unbiased person to which they can contact whenever the need arises. This person needs to be familiar with the job.
* Given time off an ambulance for brief periods. During this time stress management classes or counseling may be administered.
* CISD and exercise.
* More ADP for work done in the field and receive proper credit for same by hospital and supervisory personnel.
* Peer groups to meet in a social setting without drugs/alcohol included. It's important for paramedics to talk with people who know what they are experiencing. I believe EMS people are generally "controlling" people and they need to know that there are some situations that they will be unable to control.
* Exercise and talking with peers.
* Critical incident stress debriefings and employee assistance programs.
* I think you have to find what works for you individually. I don't care for stress counselors. Most I have seen are book educated, not street educated, but if counseling works great. I'm not saying I wouldn't ever use it.
* Critical incident stress debriefings and informal supportive contacts with co-workers.
* Continued "openness" on the issue between management and labor that recognizes the influence of real stress on the worker.
* Critical incident stress debriefings and informal supportive contacts with co-workers.
* CME classes in which you would learn how to cope with stress before, during and after the situation happens.
* Some form of proactive resource that would be available at anytime and would follow through and act upon their promises.
* Peer support groups.
* 1) being able to pick a compatible partner, 2) in a fire department setting a "break" off the ambulance (i.e., laddy duty), 3) max limit of ambulance duty (so many people don't realize burn out).
* Relief from the areas of heavy call volume and areas of high crime/violence.
To have a group counseling seminar for 8 hours CME. Let paramedics vent their anxieties, fears and problems with confidentiality from their employers or departments.

Counseling of EMT’S at least two times a year.

Talking it out with other professionals who have been there. More understanding from bosses. Time to debrief after a stressful call.

A laid back attitude while working.

Immediate recognition and assistance in the event of a stress related situation. Proper training for officers to recognize and then not degrade the individual for the problem at the officer level.

We have excellent support from our paramedic program on work related stress.

Religion in their own lives. Stress management classes and employee assistance programs.

Stress workshops. Showing EMT’S how to cope with stress.

Supportive peer groups.

1) physical training program and 2) stress debriefing.

1) stress management courses, 2) ability to get away from streets for a while, 3) family stress management for all family members and, 4) counseling for husband and wife.

First of all I feel we are overdoing the stress thing. Yes we see a lot but on the same hand, what are we doing for the family? They are the ones that have the greatest loss or pain.

Have someone with half a brain and who knows what the hell they are talking about to help you. They now get some ___-kissing, scared of the street ___ who doesn't know our job to talk to you. Get someone who has been there and doesn't give you a bunch of B.S. when you really need help.

More education for police and firefighter of a paramedics job and objectives. It seems to be far more important to catch a murderer or save a building than to save a life. Paramedics would be able to cope with stress better if they knew there was a light at the end of the tunnel (i.e., promotion, crossover).

Employers recognizing stress as a part of providing emergency care and must provide regularly scheduled stress reduction programs and/or provide a means to remove the employee from daily high stress environment.

Talking with others in your group.

In training they teach us how to care for people but not much about treating ourselves. Class instructors should teach more about stress and ways to reduce it. This should start early and be ongoing.

Available counseling without fear of departmental reprisal

The Chicago Fire Department addresses individual incidents with stress debriefing but does not consider the everyday or common problems we encounter in our jobs. I think this has to be addressed with peer support groups and counseling!

Just for upper management to realize that some calls are more stressful and that stress builds on itself. Also that some people hide stress well.

More peer group meetings.
* Teach them how to relax and leave work at work.
APPENDIX D

CORRESPONDENCE WITH DR. LAURIE ANN PEARLMAN

OF THE TRAUMATIC STRESS INSTITUTE
March 8, 1994

Matthew Galloucis

Dear Mr. Galloucis:

Congratulations on having entered the final phase of your dissertation! I am looking forward to reviewing the TSI Belief Scale data that you collected, and am grateful for the ever important reliability information that you have provided me.

Please do not hesitate to refer to the normative data for the TSI Belief Scale in your dissertation. Unfortunately, I cannot provide you with a copy of the manuscript you requested, as it is currently still "in preparation." For now, I wish you the best of luck and look forward to hearing of your successful defense.

Sincerely,

Laure Anne Pearlman, Ph.D.
Research Director
REFERENCES


The author, Matthew Galloucis, is the son of Harry and Mary Lou Galloucis. He was born July 9, 1960 in Quincy, Massachusetts.

His elementary education was completed at Hull Junior High School in Hull, Massachusetts. His secondary education was completed at Hull High School.

In September, 1978, Mr. Galloucis entered Boston State College where he matriculated until conferred the degree of Bachelor of Arts in Psychology in 1982. He was elected as a member of Psi Chi, the national honor society for Psychology undergraduates. Following his graduation he worked with developmentally disabled adults at the Walter E. Fernald State School in Waltham, Massachusetts.

In September, 1983, Mr. Galloucis entered the Master of Science program in Clinical Psychology at Eastern Washington University. He was granted a graduate research assistantship in the Department of Psychology. Mr. Galloucis also completed clinical practica at the Spokane Community Mental Health Center, Spokane, Washington and at the Center for Psychological Services at Eastern Washington.
University. His Masters thesis investigated the facilitating role of cognitive schema activation on information processing. Mr. Galloucis completed the program in 1985.

As a graduate student in the Department of Counseling Psychology at Loyola University of Chicago, Mr. Galloucis was granted an assistantship in the Loyola Counseling Center, Department of Developmental Services. He also was granted a research assistantship in the Department of Counseling Psychology. During his graduate training at Loyola University, Mr. Galloucis completed clinical externships at the David T. Siegal Institute, Michael Reese Medical Center; the Department of Psychology at the Rehabilitation Institute of Chicago and, at the Illinois State Psychiatric Institute. In September, 1991, Mr. Galloucis completed an APA approved predoctoral internship at the V. A. Medical Center in Gainesville, Florida.

His professional interests include the psychological assessment and treatment of traumatic stress reactions. Mr. Galloucis co-authored a publication on group psychotherapy approaches for treating Vietnam veterans and also was a clinical member of a specialized PTSD treatment team throughout his predoctoral internship. His dissertation investigated the psychological effects of indirect trauma exposure among emergency medical professionals.
Mr. Galloucis has worked as a staff psychologist in the Department of Clinical Services, Juvenile Court of Cook County, Chicago, Illinois and also as a mental health counselor in the Emergency Psychiatry Program at Northwestern Memorial Hospital, Chicago, Illinois. He continues to serve adolescent and adult clients as a mental health counselor at a psychiatric hospital in Chicago.
Dissertation Approval Sheet

The dissertation submitted by Matthew Galloucis has been read and approved by the following committee:

Manuel Silverman, Ph.D. Director
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Gloria Lewis, Ph.D.
Professor Emeritus, Counseling Psychology
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Ronald Morgan, Ph.D.
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The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the committee with reference to content and form.

The dissertation is, therefore, accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

4/6/95
Date

[Director's Signature]