FIRE/EMERGENCY MEDICAL SERVICES AND COPING METHODS: MITIGATING TRAUMATIC STRESS SYMPTOMATOLOGY IN EMERGENCY SERVICES PROFESSIONALS

BY

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Abstract

Firefighters and Emergency Medical Services (EMS) professionals must cope with a variety of job-related stressors. One significant stressor for fire/EMS providers involves exposure to personally disturbing incidents (PDIs). To manage the untoward effects of exposure to PDIs, fire/EMS professionals use a variety of coping methods. In this study, the effectiveness of various coping methods utilized by fire/EMS professionals for mitigating the negative effects of exposure to PDIs was examined. This study provides some clarity by identifying the subjective distress associated with certain PDIs and pinpointing detrimental coping methods of fire/EMS personnel through scores on the 28-item General Health Questionnaire and Ways of Coping Questionnaire. This study revealed five coping methods that were predictors for increasing traumatic stress symptomatology.

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CHAPTER ONE: INTRODUCTION

Various studies have examined the psychological effects of exposure to critical incidents. Findings vary from non harmful outcomes to the full development of Post-Traumatic Stress Disorder (PTSD) (Baum, Gathchel & Schaeffer, 1983; Freedy, Shaw & Jarrell, 1992; McFarlane & Papay, 1992).

In the past two decades, the research has shifted from merely considering the victims who experience critical incidents to include an examination of the stress experienced by those who have provided assistance to the victims. Researchers have investigated the detrimental impact on mental health professionals and emergency services professionals who have provided professional psychological and medical care for victims (Follette, Polusny, & Milbeck, 1994; McFarlane, 1989; Schauden & Frazier, 1995). Researchers concluded that the level of PTSD experienced by professionals caring for victims of critical incidents frequently exceeded the level found in the general public and closely resembled the level of PTSD found in victims of critical incidents (Durham, McCammon & Allison, Jr. 1985; Carlier, Lamberts & Gersons, 1997; McFarlane & Papay, 1992).

Other studies have indicated a variety of additional negative outcomes related to fire/Emergency Medical Services (EMS) professionals' exposure to critical incidents. Two negative outcomes identified were: high rates of dissociation and interpersonal relationship difficulties (Clohessy & Ehlers, 1999; Hodgins, Creamer, & Bell, 2001; McFarlane & Bookless, 2001). However, not all fire/EMS providers exposed to critical incidents develop dissociation, PTSD or

relational difficulties. It seems safe to assume that certain protective factors shield some professional care givers from the harmful effects of exposure to critical incidents (Ashikyan, 2005). Preliminary research regarding coping methods utilized by fire/EMS professionals has determined that a number of factors influence resiliency. Two coping methods used by fire/EMS providers, repressive coping and suppression, have reportedly functioned as protective factors and may be responsible for individuals' resilience following exposure to a critical incident (Bonanno, 2004; Bonanno, Noll, Putnam, O'Neill, & Trickett, 2003). However, repressive coping and suppressing feelings following exposure to a critical incident have also shown a significant positive correlation with psychological problems (McFarlane, 1988; Brown, Mulhern, & Joseph, 2002). Although the literature seems to portray contradictory data on what coping methods are helpful after exposure to a critical incident, there seems to be unanimity on the need to research coping methods that show promise for mitigating traumatic stress symptomatology associated with exposure to critical incidents.

Coping methods that reduce PTSD symptomatology are necessary for fire/EMS professionals because they daily cope with extraordinary and unrelenting stress. These work-related stressors are further accentuated by the requirements that fire/EMS providers must deliver competent, appropriate, and multifaceted life-saving interventions. Previous studies on other healthcare professionals have validated that excessive acute or sustained stress negatively influences decision-making capacity (Graham, 1981; Neale, 1991; Patrick, 1981;

Robinson, 1986; Spitzer & Neely, 1992). Fire/EMS professionals must cope with a variety of job-related stressors including critical incidents, described as events that disturb or overwhelm an individual's normal method of coping (Alexander & Klein, 2001). Managing stress to maintain decision-making capacity in perilous situations remains a matter of grave concern for fire/EMS professionals and the public they serve.

In a five year study, Rogers (1998) explored the relationship between early retirement of EMS professionals and job-related mental and physical stress. The study concluded that EMS personnel did exhibit higher rates of early retirement than other healthcare professionals, primarily due to high levels of mental and physical stress. In a study of 160 EMS personnel in the United Kingdom, Alexander and Klein (2001) found exposure to critical incidents had a negative effect on the emotional well-being and mental health of this population. The research found that emotional and physical symptomatology associated with their exposure to critical incidents included emotional reactions of increased anger, irritability, guilt, fear, paranoia, and depression. The research also found that physical problems varied from fatigue, dizziness, migraine headaches, and high blood pressure, to diabetes and cancer. Further research on exposure to critical incidents found that self-destructive and antisocial behavior may also be generated after exposure to a personally disturbing incident (Everly, 1990; Mitchell, 1982; 1983; 1986; Mitchell & Bray, 1990).

To manage the emotional and physical symptomatology associated with exposure to critical incidents, fire/EMS professionals use a variety of coping

methods. Coping methods include the use of black humor, peer consultation, involvement in interests outside of emergency services, cognitive restructuring, hardiness, avoidance, and dissonance (Alexander & Kline, 2001; Mitchell & Bray, 1990).

Statement of the Problem

Research studies with fire/EMS populations have previously concentrated on themes of burnout, occupational stress, job satisfaction, psychological distress, personally disturbing incidents, and the psychological effects of exposure to critical incidents. Fire/EMS providers constantly encounter critical incidents such as pediatric trauma/death, gunshot wounds, cardiac arrests and motor vehicle crashes. The environment they work in combined with a lack of community appreciation and the potential for personal harm often negatively effects psychological well-being of fire/EMS providers. Additionally, frequent exposure to critical incidents introduces them to levels of psychological distress comparable to the victims who are receiving emergency care. We need to better understand how coping methods may be used to decrease levels of traumatic stress symptomatology after exposure to a personally disturbing incident.

Purpose of the Study

The purpose of this study was to investigate the level of traumatic stress symptomatology in fire/EMS professionals working in an urban North Carolina fire/EMS system. Additionally, we sought to identify coping styles utilized by fire/EMS providers that demonstrated effectiveness for the mitigation of the

traumatic stress symptomatology associated particularly with exposure to personally disturbing incidents. How well they cope with this stress is an issue of great importance for them and the communities they serve. Previous studies have identified the coping methods utilized by fire/EMS professionals (Alexander & Kline, 2001; Boudreaux, Mandry, & Brantley, 1997; Durham, McCammon, & Allison, 1985). In this study we examined coping styles utilized by fire/EMS providers and sought to identify coping methods that prove effective in mitigating the traumatic stress symptomatology that follows exposure to critical incidents. It is hoped that this study will contribute to the current research on the effective utilization of coping methods to promote psychological well-being in fire/EMS providers and suggest counseling and intervention strategies that will support and enrich psychological and physical health of professionals in the fire/EMS community.

Research Hypotheses

1. No significant relationship exists between the subjective level of distress of fire/EMS professionals involved with personally disturbing incidents and their level of traumatic stress symptomatology.
2. No significant relationship exists between the demographic data and the traumatic stress symptomatology of fire/EMS professionals.
3. No significant relationship exists between the traumatic stress symptomatology of fire/EMS professionals and their choice of coping

methods even after controlling the effect of exposure to personally disturbing incidents.

Definition of Terms

Emergency Medical Services (EMS) is a system of services coordinated to provide prehospital medical care and interventions from primary response to definitive care. EMS professionals receive nationally standardized education and practicum experience in rescue operations, medical stabilization interventions, transportation procedures, and advanced treatment of traumatic and medical emergencies (Sanders, 1994).

Emergency Medical Services Professionals are credentialed individuals through the State of North Carolina Office of Emergency Medical Services. EMS professionals provide emergency medical care to victims who have experienced a life threatening trauma emergency or medical related incident. EMS professionals include emergency medical technicians (EMTs), paramedics, and firefighters credentialed as EMTs (Regulation of Emergency Medical Services, North Carolina General Statue §§ 131E-159).

A c*ritical incident* and a *personally disturbing incident* is described as an event that is sufficiently disturbing to overwhelm or threaten to overwhelm the individual's normal coping methods (Alexander & Kline, 2001).

Positive psychological health is present when a person believes that the events and experiences of life will lead primarily to positive outcomes (Adams, Benzer, Drabs, Zambarano, & Steinhart, 2000). Poor psychological health will

produce a wide range of psychologically disturbing symptoms that will result in disruption in the performance of daily life activities and the experience of subjective distress. The 28-item General Health Questionnaire (GHQ-28) (Goldberg & Hillier, 1979) will be used to differentiate people with positive psychological health from individuals with some form of psychological disturbance.

Coping has been described as the action behaviors through which individuals attempt to understand and interact with important situational or individual demands in their lives (Folkman & Lazarus, 1988). Coping methods are the means by which fire/EMS providers manage the psychological and physiological effects of exposure to critical incidents. Folkman and Lazarus (1988) outline two primary types of coping: problem-focused and emotion-focused coping. Problem-focused coping is distinguished as constructive action responses to the incident that is perceived by the individual as threatening, harmful, or challenging. Emotion-focused coping is characterized by attempting to utilize strategies that allow the individual to achieve emotional control, normalize emotional difficulty, and comprehend the traumatic incident. A third method of coping is identified as avoidance-oriented. Avoidance-oriented coping is characterized by the use of social distraction and engagement in distraction tactics to handle stressful incidents (Ashikyan, 2005). Coping methods will be measured with the Ways of Coping Questionnaire (WOC) (Folkman & Lazarus, 1988).

Posttraumatic Stress Disorder (PTSD), is classified by the Diagnostic and Statistical Manual of Mental Disorders (DSM IV-TR; APA, 2000), as the progression of explicit symptomatology after exposure to an serious traumatic event inclusive of one or more of the following: (a) specific personal occurrence of an incident that consists of actual or perceived death, serious injury or threat to the physical status; (b) witnessing an event that entails death, injury, or threat to personal safety of another person; (c) being made aware of an unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close partner. Specific personal reactions to the incident include horror, helplessness, and fear. DSM IV-TR delineates well-defined symptomatology experienced as a result of exposure to the significant traumatic event. These symptoms include: (a) intrusive memories, (b) avoidance, withdrawal, (c) unrelenting physiological stress arousal symptoms. All of the above mentioned symptoms must be present for more than 30 days and include disturbances within occupational, social, or other prominent spheres of normal functioning to warrant a diagnosis of PTSD (APA, 2000).

Symptomatology for PTSD will be assessed using the Impact of Scale-Revised (IES-R; Weiss & Marmar, 1997). Three primary PTSD symptoms will be measured: Intrusion, Avoidance, and Hyperarousal. The revised Impact of Event Scale (IES-R) assessment will be used to determine if symptomatology is present at levels of significance that warrant a diagnosis of PTSD.

The IES-R describes *intrusion* as intrusive and repetitive thoughts and images, distressing dreams, strong waves of feelings and repetitive behaviors (Weiss & Marmar, 1997).

The IES-R depicts *avoidance* as avoidance of stimuli associated with the trauma and reactions including "ideational constriction, denial of meanings and consequences of the event, blunted sensation, behavioral inhibition or counter phobic activity, and awareness of emotional numbing (Weiss & Marmar, 1997).

The IES-R defines *hyperarousal* as persistent symptoms of anxiety or increased arousal following the traumatic experience, including insomnia, hypervigilance, exaggerated startle response, irritability, and anger (Weiss & Marmar, 1997; APA, 1994).

Importance of the Study

The findings of this study may identify coping methods that benefit fire/EMS providers who are consistently exposed to critical incidents or personally disturbing incidents. Some anticipatory benefits of these findings could include: improving the psychological health of fire/EMS providers, decreasing the potential for burnout, and enhancing occupational satisfaction. The benefits have great meaning for the fire/EMS providers, their families and the communities they serve.

Limitations/Delimitations

The current study focused on the use of coping methods to mitigate the traumatic stress symptomatology in fire/EMS professionals within the Durham City/County, North Carolina, Fire/EMS System, thus limiting the generalizability of the results. The demographic composition of fire/EMS personnel of the Durham City/County Fire/EMS system may be entirely different than that of other areas, particularly rural fire/EMS systems. The instruments used in this study also have limitations in their design in general and their use in this specific study. As with all self-report assessments, the revised Impact of Event Scale (IES-R), the Ways of Coping Questionnaire (WOC), and the 28-item General Health Questionnaire (GHQ-28) are limited in that they are subject to forgetfulness or misrepresentation.

The fire/EMS providers who completed the questionnaires did so voluntarily and thus constituted a self-selected group. It is also impossible to control events occurring during the time period covered by this study. Critical incidents such as mass violence, terrorism, or significant natural disasters might have effected the study's results.

CHAPTER TWO: LITERATURE REVIEW

The Working Environment for Emergency Services Professionals

A recent study conducted by William (2006) revealed that emergency services professionals average as many as 2,800 hours a year with workweeks averaging 56-hours. In this study the variety of shift schedules that fire/EMS professionals are expected to work was also examined. Work shifts ranged from 10- to 24-hours with the most common being 24-hour shifts (53.8%). The 24-hour rotations were usually followed by a 48-hour break before returning for another 24-hour shift. Some locations had modified the 24-hour rotation to include a 72-hour break before returning for another 24-hour shift.

In Durham County, North Carolina, fire/EMS professionals responded on average to 10 calls over a 12-hour shift (Durham County Emergency Medical Services System, 2006). The number of responses in a 24-hour shift increased to 18 calls when the availability of fire/EMS personnel fell below adequate staffing levels. The amount of time that one fire/EMS unit spent on each call varied depending upon the type of call, the location of the call and the destination/receiving status of the admitting hospital. Average total time involved on each EMS call was 50 minutes (Durham County Emergency Medical Services System, 2006).

Emergency services professionals work in an environment that includes frequent exposure to adults and children who are coping with life threatening and traumatic conditions. Conditions in the workplace for fire/EMS professionals often include threats to their own and their partner's personal

safety, exposure to chemical and bio-hazardous materials, injuries and death of children and infants, repugnant victim scenes, body handling, completed suicides and homicides, and mass casualty incidents (Beaton and Murphy, 1995; Corneil, 1995). Emergency services providers must regularly cope with the stress related to these exposures and are expected to manage it appropriately.

A survey of 331 fire/EMS professionals from the Albuquerque Fire Department, found that 289 (90%) of the fire/EMS providers reported experiencing a personal assault them during their career (Pozzi, 1998). The survey also revealed that a violent situation represented a primary stressor for fire/EMS personnel. In a similar study conducted by Grange and Corbett (2002), they examined the responses of EMS professionals to 4,102 EMS calls covering a 31-day period. The examination revealed that EMS providers were exposed to violent patient behavior on more than 8.5% of their calls. The violent behavior included acts of physical and verbal abuse directed against EMS personnel that originated with the patient in 89.7% of the time and from other individuals 10.3% of the time. Spivack (1998) surveyed EMS agencies in large metropolitan cities and found that 80% percent of the EMS personnel reported involvement in gun fights, while 24% reported EMS personnel had been shot during their tenure. This is not surprising since Lucas (1999) reported that EMS providers are the only medical personnel regularly engaged on the streets and in the homes of victims of violence.

Pozzi (1998) stated that 71% of fire/EMS providers reported violence was "part of their job." Grange and Corbett (2002) insisted that since fire/EMS

professionals believed violence to be "part of their job," incidents of violence against fire/EMS personnel may be underreported. Underreporting of violence against fire/EMS professionals may also occur because fire/EMS personnel believe that reporting assaults may imply to administration they were unable to manage emergency situations.

Pozzi (1998) found also that 71% percent of the fire/EMS personnel in his study reported no clear protocols for guiding their response to threatened or actual violence against themselves. This agrees with other research findings that fire/EMS providers lack sufficient training to protect themselves from acts of violence (Pozzi, 1998; Spivak, 1998; Grange & Corbett, 2002). Roberts and Lawrence (1993) surveyed 331 EMS agencies and found only 25% of the EMS professionals had sufficient training in assessing the potential for violence on EMS scenes (Lucas, 1999).

Pozzi (1998) also found that after experiencing an assault, 80% of the fire/EMS professionals reported feelings of anger and 69% reporting feelings of irritability. He further concluded that violence against fire/EMS providers contributed to their decision to leave the profession of emergency services.

Rachael (1986) portrayed the experience of fire/EMS professionals as a relentless state of helplessness, panic, and behavioral transformations. The everyday work environment for fire/EMS personnel is a highly stressful one requiring strategic intervention if they are to maintain optimal levels of on the job effectiveness.

The Psychological and Physiological Risks for Providing Emergency Services

Early trauma research focused primarily on the impact of disasters on victims. In the last two decades, the focus has shifted towards examining the effects of trauma on individuals who help victims of calamity. Burnout, secondary traumatic stress (STS), "Vicarious Traumatization" (VT) and posttraumatic stress disorder (PTSD) are four primary psychological symptoms that researchers have found to be prevalent in individuals who provide trauma care.

Burnout is frequently associated with excessive workplace expectations, lack of appreciation for services rendered, and limited employee input into the organizational processes (Maslach & Lieter, 1997). Instead of burnout, Mitchell and Bray (1990) prefer the term "cumulative stress" to describe the emotional exhaustion, depersonalization, and sense of diminished personal accomplishment that often accompany working in highly stressful settings. Cumulative stress results from the buildup of work and non-work related stressors and often takes months or years to develop (Patrick, 1981; Maslach, 1976; Pines, Aronson, & Kafty, 1981). Often by the time cumulative stress is identified, individuals have experienced physiological, relational, and occupational problems (Flannery, 1987).

Secondary traumatic stress (STS) is the emotional duress experienced by persons having close contact with a trauma survivor (Figley, 1983). STS is the unexpected adverse reaction individuals can have to trauma survivors whom

they are helping or wanting to help (Jenkins & Barid, 2002). STS may result when a trauma caregiver is exposed to a critical incident and exhibits symptoms similar to those suffered by persons diagnosed with posttraumatic stress disorder (PTSD). The primary difference between STS and PTSD is that traumatized individuals with STS do not develop PTSD. STS has frequently been identified in mental health providers and law enforcement officers investigating child sexual abuse cases (Follette, Polusny, & Milbeck, 1994) and emergency services professionals (Marmar et al., 1996). Figley (1995) renamed STS "compassion fatigue," asserting it to be an occupational hazard for trauma caregivers and suggesting that this term is preferred because it is less stigmatizing.

A third psychological symptom prevalent in individuals who provide trauma care is "Vicarious Traumatization." McCann and Pearlman (1990) pioneered the term "Vicarious Traumatization" (VT) and differentiated VT from burnout and STS as an alteration of the trauma care provider's affect, behavior, and cognitions resulting from "empathetic engagement" with a trauma victim (Pearlman & Saakvitne, 1995, p. 31). The main symptoms of VT are cognitive disturbances in personal identity, worldview, spirituality, psychological needs, and core beliefs about self and others.

A fourth psychological symptom that researchers have found to be common in individuals who provide trauma care is posttraumatic stress disorder (PTSD). Durham, McCammon, and Allison (1985) studied 79 emergency services professionals involved in rescue operations at an apartment complex explosion.

Five months after the incident, 63 (80%) firefighters and rescue personnel had at least one posttraumatic stress disorder (PTSD) symptom. Eleven (10%) emergency services personnel met the full criteria for PTSD. The criteria for PTSD included exposure to a traumatic event that elicited a significant psychological reaction; a re-experiencing of the traumatic event through intrusive recollections or recurrent dreams; and a numbing or reduced interaction with one's environment manifested through detachment, estrangement, or constriction of emotions. In more recent studies, Bryant and Harvey (1995) discovered that 37% of Australian firefighters experienced posttraumatic stress symptomatology (PTSS) after an immense forest fire. McFarlane and Papay (1992) ascertained that 16% of firefighters experienced PTSS subsequent to a brush fire incident. The researchers reassessed the same firefighters 42 months after the fire event and discovered that 10% of the firefighters still exhibited PTSS.

When paramedics in Britain were studied for PTSD symptomatology Clohessy and Ehlers (1999) found that 21% of the paramedics evidenced PTSD symptomatology. The most common PTSD symptoms reported were repetitive and intrusive memories regarding the critical incident (49%) and intrusive memories which were particularly prevalent with incidents related to the death of a child (86%). Others symptoms of PTSD included petulance, disengagement from others, and sleep disorders. These studies indicated that minor emergency incidents (i.e., incidental vehicle crashes) may result in 25% of EMS personnel

experiencing PTSD symptoms or other associated stress disorders (Ashikyan, 2005).

PTSD researchers have examined the negative relationship between PTSD and interpersonal relationships. After a critical fire incident, one study found that 80% of firefighters reported irritability, 50% revealed spending less time with their families, and 31% reported decreased sexual intimacy (McFarlane & Bookless, 2001; McFarlane, 1988).

Hodgins, Creamer, and Bell (2001) investigated the etiology of PTSD and dissociation in 223 junior law enforcement officers in a longitudinal study. The study revealed that the use of dissociation increased the potential for experiencing PTSD. Dissociation is described as a deficit in the natural integration of thoughts, feelings, and experiences into the course of consciousness and memory. Dissociation can come about within the "normal" population; however, it is often more common within populations with severe psychopathology (Bernstein & Putman, 1986).

Bryant and Harvey (1996) reported emergency services professionals involved in a critical incident experienced a sensation of helplessness due to inability to prevent a trauma victim's suffering. Limited control over the outcomes in a critical incident has been acknowledged as a critical determinant in the development of PTSD (Frye & Stockton, 1982; Mikulincer & Solomon, 1988). This relationship seems to validate the idea that emergency services providers may be at high levels of risk for PTSD due to their extensive exposure

to critical incidents and their sense of limited personal control over outcomes in these critical incidents.

Research has verified that emergency services providers have higher levels of PTSD symptomatology and higher diagnostic rates of PTSD than the general population (Fullerton, McCarroll, Ursano, & Wright, 1992; McCarroll, Fullerton, Ursano, and Hermsen, 1996). Emergency providers with high levels of PTSD symptomatology are at the risk for psychological impairment for up to two years after exposure to a critical incident (Marmar et al., 1999; McFarlane, 1986).

Dissociation has been identified as a critical element in traumatic stress (Marmar et al., 1994; Bremner et al., 1992; Putman, 1989). The initial research on dissociational traumatic stress involved Vietnam veterans. However, Weiss et al. (1995) reported similar findings while studying the emergency services professionals.

Weiss and Marmar (1997) used the revised Impact of Event Scale (IES-R) with assessments for dissociation and PTSD. Their study revealed a significant positive correlation between dissociation and PTSD. They surveyed 275 emergency services professionals regarding the presence of dissociation and levels of PTSD (Marmar et al., 1999). The use of dissociation was determined to be a better predictor of posttraumatic stress symptomatology than years of experience, social support systems, occupational adjustment, and incident exposure. Several studies have suggested that dissociation is significantly related to the development and continuance of PTSD (Foa & Hearst, 1996; van der Kolk & Fisher, 1995). More specifically, Clohessy and Ehlers (1999) studied 56 EMS

professionals and discovered that the relationship between dissociation and the presence of PTSD symptomatology was a significant one. Several longitudinal studies have correlated PTSD with the use of dissociation during or directly after a critical incident exposure (Shalev et al., 1996; Koopman, Classen, & Spiegel, 1994). These studies validate that although dissociation may protect emergency services professionals from the initial psychological distress related to critical incident exposure; however, they will be more susceptible to experiencing PTSD after the critical incident has been resolved.

Empirical research has demonstrated that trauma care providers who offer emergency care for critical incidents populations will likely experience psychological problems (Figley, 1995; Paton, 1994; McCann & Pearlman, 1990). Healthcare professionals who are continuously exposed to traumatic incidents are at significant risk for experiencing post-traumatic stress symptomatology (Fullerton, McCarroll, Ursano, & Wright, 1992).

Alexander and Kline (2001) surveyed 110 emergency services professionals regarding the most disturbing incidents encountered in emergency services. The research revealed the most frequently encountered disturbing incidents were related to personal assaults and suicides. Other highly disturbing critical incidents were, listed in order of highest to least significance, caring for a child victim, caring for a victim is known to the emergency services provider, caring for persons and experiencing helplessness at the scene, caring for persons who have sustained particularly grotesque injuries, caring for persons when there is insufficient back-up from colleagues, and caring for persons in situations

where the emergency services providers are given inaccurate information regarding the scene or condition of casualties. After involvement in these critical incidents, nearly 70% of those surveyed indicated that they "never" had sufficient time to psychologically recover after exposure to the critical incident.

Fullerton (1992) and her colleagues identified the four following responses of emergency services professionals to involvement in a critical incident: identification with the victim, helplessness and guilt, fear of the unknown and physiological reactions that included extreme fatigue and exhaustion

The "identification with the victim" response is understood to be a cognitive process including an emotional involvement by which we come to see the victims as being similar to ourselves. This "identification" may intensify the trauma experience for the emergency services provider (Ursano & Fullerton, 1990; Ursano & McCarroll, 1990).

Helplessness and guilt are feelings experienced by emergency services professionals who believe they should have done more for victims involved in a critical incident. Rachael (1986) explains that the feeling of helplessness experienced by emergency services providers is a response to the victim's "unspoken request" to return life to where it was before the trauma. Helplessness and guilt are often experienced by for emergency services professionals who desire to fulfill the victim's request but are unable to do so.

Fullerton and her colleagues (2004) studied more than 600 emergency service professionals to examine the psychological effects of exposure to a critical incident. Two-hundred and seven of these individuals had been engaged in

rescue operations following an airplane crash. The critical incident involved a United Airlines DC-10 carrying 296 passengers and crew. The DC-10 was forced to crash land at Sioux City, Iowa after experiencing a midair explosion that caused the failure of the plane's hydraulic system. Causalities included 112 deaths at the scene and 59 seriously injured. Fullerton compared the emergency services group at Sioux City with 421 emergency services providers who were not involved in the airplane rescue operation.

The Fullerton et. al. (2004) study revealed that the emergency services professionals who had been exposed to the critical incident had significantly higher rates of depression, acute stress disorder, and posttraumatic stress symptomatology than the group that had not been exposed. Additional findings revealed that:

- EMS providers who were younger and single were more likely to develop acute stress disorder.
- EMS personnel exposed to a critical incident, who received a diagnosis of acute stress disorder, were 3.93 times more likely to be depressed seven months following the incident.
- Emergency professionals exposed to critical incidents who had extensive previous critical incident exposure or acute stress disorder were more likely to develop PTSD.
- EMS providers who were depressed seven months after exposure to a critical incident were 9.5 times more likely to have PTSD.

- EMS providers who were depressed at 13 months after exposure to a critical incident were 7.96 times more likely to also meet PTSD criteria.
- Thirteen months following exposure to a critical incident, 40.5% of EMS professionals involved in the critical incident had diagnosable depression, acute stress disorder, or PTSD versus 20.4% of the comparison subjects.

Boudreaux, Mandry, and Brantley (1997) studied stress, job satisfaction, coping, and psychological distress in emergency services providers from a large, urban, public emergency medical system. They found that job-related stressors were significant predictors for more severe symptoms of anxiety, lack of sympathy, and universal psychological distress. They used *The Symptom Checklist-90, Revised* (SCL-90-R) to assess levels of psychological well being. The SCL-90-R (Derogatis, 1992) is used to measure an extensive array of psychological symptoms summarized under nine symptom groupings and three universal dimensions. In this study they focused on depression, anxiety, hostility, and global distress.

Boudreaux, Mandry, and Brantley (1997) compared the EMTs' average SCL-90-R scores on these symptom scores from the general population. The emergency services professionals' scores on the symptoms of depression, anxiety, hostility, and universal psychological distress averaged at the 70th percentile. The results indicated that significant levels of psychological distress were the norm for emergency services providers. A majority of the subjects

scored above the 84th percentile on one or more of the psychological distress scales and 81% of the subjects scored above the 93rd percentile on at least one of the SCL-90-R's dimensions.

These researchers concluded that the levels of psychological distress experienced by the fire/EMS professionals in their study were severe enough to necessitate intervention from a mental health professional. It is interesting to note that the EMTs in this study had not indicated any recent exposure to a critical incident. The researchers concluded that the persistent and intense stress associated with working in emergency services has a negative influence on the overall psychological well-being of emergency services providers.

Stress induced burnout for paramedics was also studied by Grigsby and McKnew (1988). They studied 213 paramedics examining the contribution of the emergency service work environment on the production of stress. They examined in particular eight "predictors" of stress. They found three indicators that had the greatest impact for the production of stress. These were: negative relations with coworkers, general job dissatisfaction, and threat of personal physical harm associated with the performance of duty. The researchers concluded with the assertion that the "burned out" paramedic is one who: is above average age, considers the work environment unpleasant, considers job demands physically threatening, considers the paperwork load excessive, has difficulty with interpersonal relationships at work, and perceives the prerequisites for recurrent paramedic credentialing to be a peril to his livelihood.

According to the United States Bureau of Labor and Statistics (BLS) (U.S. Department Of Labor, 2006-2007 ed.), the rate of occupational injuries and illness among EMS professionals is approximately six times greater than the national average (35.5 incidents per 100 full-time employees). The leading causes of injuries were preventable musculoskeletal injuries. The foremost safety risk and leading cause of death for EMS providers was vehicle collisions (Maguire, Hunting, Smith, & Levick, 2002).

Researchers have found that dangerous work conditions coupled with a lack of appreciation for their medical services have serious implications for fire/EMS professionals (Allison, Whitley, Revicki, & Landis, 1987). The impact of emergency services working conditions on fire/EMS providers has been identified as Occupational Stress Syndrome (OSS) (Hammer, Matthews, Lyons, & Johnson, 1986). OSS is segmented into four dimensions: organizational stress, negative attitudes towards patients, job dissatisfaction, and somatic distress. *Organizational stress* is described as a negative attitude toward one's place of employment and coworkers. *Negative attitude toward patients* is a negative feeling about patients, including insensitivity to their physical and emotional needs and physically abusive encounters with patients. *Job dissatisfaction* is discontentment with one's current occupational position. *Somatic distress* is the presence of physiological symptoms of severe or chronic stress including fatigue, increased illness, and self-medication to relax. Hammer et al. (1986) concluded that EMS professionals exhibit higher levels of OSS than other healthcare professionals within the hospital setting.

Cydulka, Lyons, Moy, Shay, Hammer, and Matthews (1989) studied OSS in a population of 280 paramedics employed within an EMS division in a large Midwestern city fire department. Participants completed a demographic questionnaire, recent life events form, on-the-job behavior inventory, and the revised version of the Medical Personnel Stress Survey (MPSS-R). The MPSS-R measures the four components of OSS: organization stress, negative attitudes towards patients, job dissatisfaction, and somatic distress. In the results of this population the researchers found high levels of organizational stress, job dissatisfaction, and negative attitudes towards patients but low levels of somatic distress. The paramedics studied exhibited OSS primarily through negative organizational attitudes or patient care dimensions rather than through the usual psychosocial markers of stress such as fatigue, sickness, and somatic complaints. These results were comparable to those obtained by Hammer et al (1986).

Cydulka et al. (1989) concluded that increasing age, increasing years as a paramedic, and increasing years in a given position, contributed significantly to increasing levels of job dissatisfaction, higher levels of reporting of negative behaviors by patients, more critical errors in patient care, calling in sick more frequently, and more frequent abuse of alcohol and drugs.

In Cydulka's study job dissatisfaction was found to be a significant contributor to the total stress score. Job dissatisfaction is thought to be a reliable indicator of burnout (Dolan, 1987). The research shows that emergency services professionals experience high levels of work-stress burnout. (Neale, 1991; Grigsby & McKnew, 1988). Burnout for emergency services providers is a

complex phenomenon and research has found that it results in poor patient care, intensified turnover, job performance issues, escalated abuse of alcohol and drugs, and interpersonal relationship problems (Maslach & Jackson, 1981; Seamonds, 1982, 1983; Herbison, Rando, Plante, & Mitchell, 1984); Dorian & Taylor, 1984; Violanti, Marshall, & Howe, 1983).

Coping Methods Utilized by Fire/Emergency Medical Services Professionals

Research suggests that emergency services providers are best served by utilizing a variety of coping methods and adapting their use to specific circumstances (Alexander & Kline, 2001).

Fullerton et al. (1992) identified four stress mitigators used by emergency service providers to offset the negative effects of involvement in critical incidents. The first of the four stress reducers they discussed was social support. Social support was described as working in pairs with other emergency service providers to make decisions. The use of social support provides "moral support," and feelings of security from knowing that someone is nearby. The second stress reducer identified by fire/EMS personnel was observing and experiencing transparency in the fire/EMS administrators. Emergency service professionals benefited from knowing that leadership was experiencing the same psychological difficulties from exposure to critical incidents as non-administrative personnel were. The third strategy for mitigating the negative effects of involvement in critical incidents recognized by emergency services providers was previous training in critical incident scene management. This

training prepared the rescue personnel to remain focused while at the scene of the incident hence maximizing numbers of survivors. Critical incident scene management is complicated and requires an understanding of scene communications, ability to encourage peer support, and an understanding of how to decrease identification and emotional involvement with the victims. The fourth strategy identified by emergency services professionals to mitigate the stress experienced from exposure to critical incidents was the use of rituals. Rituals included elements like being sensitive to the needs of the victims, creating closure through debriefings, and ensuring that all the victims received appropriate medical care. Rituals were used to organize the experience by attributing meaning to events (Ursano & Fullerton, 1990). Rituals also facilitated the management of anxiety and fear of the unknown during times of chaos and confusion.

Alexander and Kline (2001) used the Coping Methods Checklist (CMC) to evaluate eight coping methods utilized by emergency services professionals within six months of exposure to a critical incident. The CMC was based on Alexander's study of law enforcement officers who were responsible for recovering and handling 167 bodies after the Piper Alpha oil rig disaster in July 1988. The CMC is an eight-item self-reporting list that describes specific coping methods used. It allows the individual to grade the level of successful coping associated with the use of a specific coping strategy. The eight coping methods included: "black humor, talking with colleagues, looking forward to off-duty, keeping thoughts/feelings to self, thinking about their own family, thinking

about outside interests, thinking about positive benefits of work, and avoiding thinking about what you are doing" (Alexander, 1993, p. 79). Alexander found that "talking with colleagues" was used by 94% of the providers and resulted in a "very helpful" (49%) and "helpful (47%) outcome ratios. He found that "keeping thoughts/feelings to self" was used by 82% of the providers with only 7% reporting the strategy was "very helpful." Additionally, "avoiding thinking about what you are doing" was used by 69% of the personnel with only 7% reporting that it was "helpful".

Boudreaux, Mandry, and Brantley (1997) assessed the coping styles of emergency services providers with the Ways of Coping Questionnaire (WOC). The WOC is a 66-item instrument that assesses how individuals cope with stressful circumstances. The questionnaire generates eight scales: (1) Confrontive Coping, (2) Distancing, (3) Self-controlling, (4) Seeking Social Support, (5) Accepting Responsibility, (6) Escape-Avoidance, (7) Planful Problem Solving, and (8) Positive Reappraisal.

They found several of these coping styles were associated with undesirable outcomes that contributed to occupational burnout. Accepting Responsibility was consistently related to undesirable outcomes. This coping method involved the individual in the exaggerating of his role in a problem. The researchers found that emergency services professionals who used this coping method manifested more negative attitudes toward patients and elevated levels of perceived stress and physiological arousal. This finding was consistent with previous research indicating individuals who score high on Accepting

Responsibility had higher levels of depression (Folkman and Lazarus, 1988). A high score on this scale might indicate that emergency services providers are unjustly critical of themselves and assume too much personal responsibility for critical incident outcomes. These healthcare providers experience higher levels of physiological and psychological suffering which leads to burnout.

Boudreaux, Mandry, and Brantley (1997) found that two additional coping methods were highly correlated with negative outcomes. These were Confrontive Coping and Escape-Avoidance. Their findings indicated that emergency services professionals who handled stressors with aggression, hostility, risk taking, wishful thinking, escape tendencies, and avoidance were more likely to experience poor attitudes towards their patients, enhanced feelings of psychological exhaustion, elevated levels of perceived stress and increased physiological stimulation. These findings were consistent with previous research that found subjects using Confrontive Coping or Escape-Avoidance reported more depressive symptomatology, decreased self-esteem, and heightened psychological maladjustment (Aldwin & Revenson, 1987; Felton, Revenson, & Hinrichsen, 1984; Manne & Sandler, 1984). The findings also indicated that specific coping methods were highly correlated with burnout, perceived stressfulness, and physiological stimulation. These findings led the researchers to conclude that the selection of coping methods is a matter of great importance since the misuse of coping methods was a more powerful predictor of an undesirable outcome than the number of stressful events experienced by fire/EMS providers.

Durham, McCammon, and Allison (1985) studied the coping methods of 79 emergency professionals to determine the frequency of use for certain coping methods. Two commonly used coping methods found by emergency providers to be helpful were "reminding oneself that things could be worse" (57%) and "keeping a realistic perspective about the crisis" (53%). Durham and his colleagues discovered three cognitive strategies were interlaced with the coping styles of the emergency providers. These were: attempting to gain mastery over the critical incident, preparing mentally for dealing with its possible recurrence, and understanding the significance of the tragedy. They concluded cognitive coping strategies were more effective than denial/avoidance coping strategies.

McFarlane (1988) discovered avoidance was a common coping method used by emergency services professionals. His study did not examine the effectiveness of avoidance for preventing PTSD. His study did examine the potential benefit of avoidance as a coping method for assisting emergency services professionals with focusing on tasks required at the time of a crisis. He found avoidance was often used by emergency services providers, to ward off feelings of being overwhelmed. Avoidance was also used to ward off feelings of fear and anxiety that might prevent the emergency services provider from performing the necessary emergency interventions at the time of the incident.

The psychological health and coping methods utilized by 248 firefighters were studied by Brown, Mulhern, and Joseph (2002). Three common coping methods were discovered: avoidance, emotion-focused, and task-focused coping. Avoidance coping methods involved the suppression of problems and emotions

(i.e., not sharing feelings, not expressing outbursts of frustration, etc.). Emotion-focused coping methods involved the emergency services personnel in the reframing of thoughts by placing them inside positive thoughts or enjoyable activities. Task-focused coping methods consisted of activities like seeking information, planning, and taking action. The researchers found that for firefighters with less exposure to critical incidents emotion focused coping was significantly correlated with better psychological health. The research revealed that for fire professionals who had significant exposure to critical incidents task-focused coping was associated with better psychological health. In all levels of exposure the research revealed that avoidance coping methods were most frequently related to lower levels of psychological health.

Brown (2002) and his colleagues concluded that the enormity of the critical incident was also associated with the effectiveness of the particular coping method being utilized. The lower the level of enormity as perceived by the fire professional the more effective the use of emotion-focused coping because the duties to perform were not perceived to be too overwhelming. The higher the level of enormity as perceived by the fire professionals the more they tended to utilize task-focused coping so as to not become overwhelmed by emotions. The researcher suggests that emergency services providers might benefit from professional continuing education that familiarizes them with the number and effectiveness of various coping methods. The researcher also suggested that fire/EMS personnel would benefit from continuing education on

such matters as effective anger management, emotional disclosure, and relaxation techniques.

Although not studied specifically within emergency services. Resilience is a style of coping that may have implications for emergency services providers. The research literature on resilience could have positive implications for helping fire/EMS providers avoid burnout and other negative outcomes of exposure to critical incidents. Possible benefits to fire/EMS professionals from learning resiliency skills are: they may be able to perform life-saving skills in a more focused fashion and they may be better able to maintain a positive internal equilibrium when exposed to a personally disturbing incident.

Schiraldi (2007) defined resilience as an intrinsic or developed strength to adapt well to extreme stress. Resilience includes the ability to be flexible and perform necessary tasks calmly and competently. Resilient individuals have the ability to maintain optimal mental health under adverse conditions and rebound quickly from the deleterious effects of overwhelming stress.

Schiraldi (2007) studied survivors of the atrocities of World War II and identified 13 common resilience skills. The resilience skills included the maintaining of: calm under pressure, self-esteem, optimism, mindfulness, meaning/purpose, active coping/problem solving, integrity, flexibility, humor, social intelligence, sense of balance, spirituality, and guilt management.

Before exposure to a personally disturbing incident, fire/EMS providers may benefit from learning these attitudinal, emotional, and behavioral skills.

Future studies examining the presence of these resilience skills within emergency services providers may suggest effective strategies for mitigating stress symptomatology experienced emergency services providers.

Summary of Literature Review

The working environment for fire/EMS professionals includes frequent exposure to adults and children coping with life threatening medical and trauma related conditions. Emergency services providers are expected to cope with the stress related to these exposures.

Research has demonstrated that fire/EMS providers who offer emergency care for critical incidents populations are enduring high levels of stress and will likely experience psychological problems (Figley, 1995; Paton, 1994; McCann & Pearlman, 1990). The literature we have examined concluded that emergency services professionals who were exposed to critical incidents had significantly higher rates of depression, acute stress disorder, and posttraumatic stress disorder than those not exposed to similar critical incidents. The literature reviewed has documented that work-stress burnout for paramedics results in poor patient care, intensified turnover, job performance issues, escalated abuse of alcohol and drugs, and interpersonal relationship problems (Maslach & Jackson, 1981; Seamonds, 1982, 1983; Herbison, Rando, Plante, & Mitchell, 1984); Dorian & Taylor, 1984; Violanti, Marshall, & Howe, 1983).

The literature also supported the conclusion that no particular method of coping assures protection from the harmful effects of exposure to critical

incidents. It is likely that emergency services providers are best served by developing their ability to utilize a variety of coping methods that are adaptable to specific circumstances (Alexander & Kline, 2001).

Fullerton et al. (1992) identified four coping strategies that are used by emergency service providers to offset the negative effects of involvement in critical incidents. These four coping methods included: social support, leadership transparency, critical incident scene management, and rituals.

Boudreaux, Mandry, and Brantley (1997) found several of the coping styles of emergency services providers were associated with maladaptive outcomes. These detrimental coping methods included: accepting responsibility, confrontive coping, and escape-avoidance. Use of these coping methods contributed to occupational burnout. Training in the proper selection of coping methods is important because the misuse of coping methods is often more detrimental to psychological and physical health than the number of stressful events encountered by fire/EMS professionals (Aldwin & Revenson, 1987; Felton, Revenson, & Hinrichsen, 1984; Manne & Sandler, 1984).

CHAPTER THREE: METHODOLOGY

This study investigated the level of traumatic stress symptoms in fire/EMS professionals working in an urban North Carolina fire/EMS system. Additionally, we sought to identify the coping styles utilized by these fire/EMS providers that demonstrated effectiveness for the mitigation of the traumatic stress symptomatology associated with exposure to personally disturbing incidents. This chapter provides an overview of the population studied, the instruments used in the research, the procedures followed in the conducting of the research and an overview of the research design and the processes utilized in the analysis of the data.

Population

Durham County is centrally located in the State of North Carolina and contains the City of Durham. The combined population of the city and county is more than 483,000. The Durham County Fire/EMS system includes: five county fire/EMS agencies, one county EMS agency, and one city fire/EMS department. The Durham County EMS system district covers 290 square miles and Durham County is served by a minimum of eleven paramedic ambulances, five within the City of Durham and six serving outside the city limits and first responder/EMT service via the closest fire station.

The system is comprised of more than 100 career and volunteer paramedics/Emergency Medical Technicians (EMTs) and 500 career and volunteer firefighters. In 2005, the Durham County EMS system responded to

nearly 30,000 EMS calls. The categorization of the EMS calls was as follows: 72% of the calls involved medical emergencies (medical cardiac arrests, chest pains, altered mental status, seizures, and respiratory difficulty) and 24% involved traumatic emergencies (traumatic cardiac arrest, gunshot wounds, stabbings, motor vehicle crashes, and assaults). The average monthly EMS system call classification of potentially critically incidents calls for 2005 was: 160 motor vehicle crashes, 6 motor vehicle crashes with victims trapped in the vehicle, 66 pediatric care calls, 14 adult medical cardiac arrests, 1 adult trauma cardiac arrest, 1 pediatric cardiac arrest, 47 adult assaults, 14 gunshot wounds, 5 stabbings, 10 medical deceased, and 2 trauma deceased calls (Durham County Emergency Medical Services System, 2006).

A sample of the more than 500 career and volunteer fire/Emergency Medical Services (EMS) professionals from the Durham County EMS system were invited to participate in an anonymous survey. The sample did not include fire/EMS administrators and personnel whose primary responsibilities were only routine patient transports. All participants were English speaking adult males and females (see Chapter 4 demographics). Participants were recruited from diverse ethnic and racial backgrounds.

Instrumentation

The purpose of this study was to investigate the level of traumatic stress symptomatology in fire/EMS professionals working in an urban North Carolina fire/EMS system. Furthermore, we sought to identify coping styles utilized by

these fire/EMS providers that demonstrated effective mitigation of the traumatic stress symptomatology associated with exposure to personally disturbing incidents. The primary investigator consulted with the county EMS director and each fire department's administration to solicit support for the research project. Once administrative support and written approval was received, publicity about the study was widely distributed to each fire/EMS provider within the Durham City/County Fire/EMS system.

The principle investigator purchased or received permission from the authors to duplicate the assessments/inventories utilized in this study. The assessments were assembled by the principle investigator and structured into a survey booklet. Sixty days before the system-wide administration of the survey, a pilot study was conducted with a small sample within the fire/EMS system to ensure the survey was functional, subjects could navigate the survey layout, and the questions were clearly stated.

At the initial session with the participants, the investigator distributed the two consent forms and the survey. The investigator conducted a ten-minute introduction to the study, discussing the two consent forms, and providing instructions for completing the surveys. The surveys included a background/demographic questionnaire (BDQ), the revised Impact of Event Scale (IES-R), the 28-item General Health Questionnaire (GHQ), and the Ways of Coping Questionnaire (WOC).

The participants completed the survey in a group training session at the time of the overview. A confidential subject identification number was

distributed to each fire/EMS provider during the survey session. The confidential subject identification number identified their department affiliation only (county fire/EMS, county EMS, or city fire/EMS). This could be used in future research for subset analysis. The approximate time to complete the survey was 20 minutes. When the data analysis was completed, the principal investigator returned to each agency/department and provided a multi-media presentation of the results of the study.

Research Design and Data Analysis

The focus of this study was to investigate the level of traumatic stress symptomatology in fire/EMS professionals working in an urban North Carolina fire/EMS system. Furthermore, we sought to identify coping styles of fire/EMS providers that demonstrated effective mitigation of the traumatic stress symptomatology associated with exposure to personally disturbing incidents.

The data was analyzed with SPSS (2007) software. Descriptive and correlational analysis was used to examine the relationship between the psychological health of fire/EMS professionals and their use of different coping methods. Preliminary analyses were performed to determine the level of traumatic stress symptomatology in fire/EMS professionals and the relationship of that traumatic stress symptomatology to exposure to personally disturbing incidents. Analyses were also conducted to determine the relationship between characteristics of the fire/EMS professionals and group demographics.

Three research hypotheses were investigated in this study. The first hypothesis stated that there is no significant relationship between the subjective level of distress of fire/EMS professionals involved with personally disturbing incidents and their level of traumatic stress symptomatology. To answer this hypothesis we examined the relationship between the subjective level of traumatic stress symptomatology in fire/EMS providers to seven different PDIs and their level of traumatic stress symptomatology. We measured their subjective levels of distress by adding and averaging their total score from the PDI self-report section in the BDQ. Under the first research hypothesis, the independent variable was the subjective level of distress of fire/EMS professionals involved with personally disturbing incidents. The dependant variable was traumatic stress symptomatology. To determine a parametric correlation between subjective levels of distress and traumatic stress symptomatology, Pearson correlation procedure was performed to locate the significant results.

The second hypothesis stated that there would be no significant relationship between the demographic data and the traumatic stress symptomatology of fire/EMS professionals. The objective of the second hypothesis was to differentiate the association between the demographics and the traumatic stress symptomatology of fire/EMS professionals. The independent variables were age, gender, ethnicity, marital status, current position, and years of experience. The dependent variable was traumatic stress symptomatology. To determine nonparametric and parametric correlations

between specific demographic data and traumatic stress symptomatology, a Pearson correlation and a Spearman's rho procedures was performed to determine the significant effects.

The third hypothesis stated there would be no relationship between the traumatic stress symptomatology of fire/EMS professionals and their choice of coping method even after controlling the effect of the exposure to personally disturbing incident. The independent variable was coping method. The control variable is the Total Distress variable. The Total Distress variable was created by totaling and averaging each fire/EMS professionals' subjective PDI distress level from the BDQ. The dependent variable was traumatic stress symptomatology. To predict which coping methods mitigate traumatic stress symptomatology in fire/EMS professionals, a linear regression procedure was performed to discover significant outcomes. To predict the odds of traumatic stress symptomatology related to specific coping methods, a logistic regression procedure was performed to determine the significant outcomes.

Instrumentation

Background and Demographic Questionnaire (BDQ) (Alexander & Kline, 2001)

The 22-item background and demographic questionnaire was a basic demographic information survey originally created by Alexander and Klein (2001) and used with permission from the authors. The original BDQ was utilized with EMS providers in Scotland, England. The wording and format were modified by the investigator to make the questionnaire more relevant to

fire/EMS professionals in the United States (i.e. checking the box versus ticking the box).

The BDQ was used to collect information related to age, gender, years of EMS career experience, credential status (paramedic, EMT, firefighter/EMT, firefighter), characteristics of the most distressing critical incidents encountered in the previous six months, the consequences of regular exposure to critical incidents, and the value of support, coping methods, training, and equipment available in the EMS system. A copy of the BDQ is located in Appendix C.

The 28-item General Health Questionnaire (GHQ-28) (Goldberg & Hilliner, 1979)

To determine the level of traumatic stress symptomatology, traumatic stress symptomatology was measured by using the 28-item General Health Questionnaire (GHQ-28; Goldberg & Hillier, 1979). The GHQ-28 has four subscales: Somatic Symptoms (SoS), Anxiety and Insomnia (AI), Social Dysfunction (SoD), and Severe Depression (SeD). The GHQ-28 questionnaire asks subjects to respond to questions about recent symptoms or changes in behavior (e.g., HAVE YOU RECENTLY: been having restless, disturbed nights? felt capable of making decisions about things? felt constantly under strain?). The subject selects one of four responses to each question using a 4-point Likert scale that best describes recent experiences. Selecting either of the two responses that deny problems receives a 0 score, and choosing either of the two responses that affirm difficulties receives a score of 1 point. The GHQ-28 yields a single score with threshold scores of 4 or 5 indicating probable psychiatric disorder.

Independent studies of the internal consistency of the GHQ-28 are supported by Cronbach's alphas ranging from .84 to .93. Split-half reliability was computed on 853 questionnaires and revealed a coefficient of .95. Validity of the GHQ-28 is corroborated by several studies investigating the probability (.82) that a "true normal" will be correctly established and the probability (.86) that a "true abnormal" case will be correctly established for each scale across a variety of cultures (LoBello, 1995). A copy of the GHQ-28 is located in Appendix E.

The Impact of Event Scale-Revised (IES-R) (Weiss & Marmar, 1997)

To determine the level of traumatic stress symptomatology, the revised Impact of Event Scale (IES-R; Weiss & Marmar, 1997) was used. The IES-R establishes the frequency of self-reported post-traumatic stress symptoms and disturbing incidents (e.g. flashbacks and nightmares) following experience with a particular critical incident. The instrument was normalized with data collected from paramedics, firefighters, law enforcement personnel, and California Department of Highway personnel. The initial 429 participants included individuals involved in rescue operations surrounding the 1989 Loma Prieta earthquake, individuals who were not involved in the rescue operations but lived and worked within the San Francisco Bay area, and emergency service providers from the San Diego district. The IES-R has also been used extensively with comparable populations and clinical participants (Saladin et al., 2003, Marmar et al., 1999; Renck, Weisaeth, and Skarbo, 2002; Peltzer, 2000; and Meyer et al., 1999).

The IES-R is a twenty-two item self-report questionnaire that assesses the level of symptomatology related to specific traumatic incidents. Seven additional items were added to the original version (IES) to measure "hyperarousal" and to parallel the DSM diagnostic criteria (APA, 1994) for Post Traumatic Stress Disorder (PTSD). The new hyperarousal items assess the realms of anger and irritability, jumpiness and exaggerated startle response, trouble concentrating, psychophysiological arousal upon exposure to reminders, and hypervigilance (Weiss & Marmar, 1997).

The original IES consisted of seven items measuring "intrusion" and eight items assessing "avoidance" (Horowitz, Wilner, & Alvarez, 1979, p. 210). Intrusion is defined as experience with "unbidden thoughts and images, trouble dreams, strong pangs or waves of feelings, or uncontrolled repetitive behavior." Avoidance is defined as "ideation constriction, denial of the meanings and consequences of events, blunted sensation, behavioral inhibition and counterphobic activity and emotional numbness" (Horowitz, Wilner, & Alvarez, 1979, p. 210). These subscales have not been substantially modified in the IES-R.

Marmar et al. (1996) and Weiss et al. (1995) have obtained Cronbach's alphas of .91, .84, and .90 for the Intrusion, Avoidance, and Hyperarousal subscales, respectively. These alpha measures represent an improvement over the original Impact of Event Scale (IES) which achieved alphas of .79 for intrusion and .82 for avoidance (Horowitz, Wilner, and Alvarez, 1979). Horowitz and Solomon (1975) discovered high test-retest reliability scores for the IES: .89 for intrusion, .70 for avoidance, and .87 for the total score. Comparable high

reliability scores have been detailed for the IES-R. Marmar et al (1996) found test-retest correlation coefficients to be .57, .51, .59 whereas Weiss et al. (1995) reported higher test-restest correlation coefficients of .94, .89, and.92 for the subscales of Intrusion, Avoidance, and Hyperarousal, respectively. The difference in the scores may be due to a shorter interval between assessments that could have influenced the higher coefficients of constancy.

The directions for the IES-R guide the participant through a list of "difficulties people sometimes have after stressful life events." Participants are asked to signify how bothersome each difficult event has been for them during the past 7 days. Weiss and Marmar (1997) provide guiding principles to help researchers ascertain if the experience with a critical incident is or is not the precise event and describe if the incident is not consistent with the Diagnostic and Statistical Manual of Mental Disorders (DSM IV-TR; APA, 2000). If not consistent, it is not appropriate to use the IES-R.

The participants were asked to fill in the blank with a specific event that occurred in the past seven days using one of the events described in question 7 in the background and demographic questionnaire, which measure the amount of perceived stress related to critical incidents in emergency services. The IES-R was administered only to subjects that reported experiencing a disturbing incident within the previous six months. A copy of the IES-R is located in Appendix D.

The Ways of Coping Questionnaire (WOC) (Folkman & Lazarus, 1988)

To examine coping methods that may mitigate traumatic stress symptomatology, the Ways of Coping Questionnaire (WOC; Folkman and Lazarus, 1988) was used. The WOC is rooted in cognitive-phenomenological theories of stress and coping. The WOC yields eight scales for coping styles. They are: (1) Confrontive Coping (CC: utilizes aggressive tactics to modify the situation and indicates some degree of hostility and risk-taking); (2) Distancing (DI: utilizes cognitive strategies to detach from and diminish the significance of the situation); (3) Self-controlling (SC: utilizes feelings and actions to normalize one's emotions and behaviors); (4) Seeking Social Support (SS: utilizes resources to seek information support, touchable support, and psychological support); (5) Accepting Responsibility (AR: utilizes recognizing one's own responsibility in the situation while simultaneously trying to put things right); (6) Escape-Avoidance (EA: utilizes wishful cognitions and behavioral approaches to escape from or avoid the problem; (7) Planful Problem Solving (PS: utilizes purposeful problem-focused behaviors to address the situation, coupled with an analytic approach to solving problems); and (8) Positive Reappraisal (PR: utilizes the creation of optimism to focus on personal growth and growth in spirituality).

The WOC questionnaire has adequate internal consistency with alpha scores as follows: CC=.70, DI=.61, SC=.70, SS=.76, AR=.66, EA=.72, PS=.68 and PR=.79 (Folkman & Lazarus, 1988). The evidence for construct validity for the WOC questionnaire is consistent with the theoretical assumptions that coping is a process and consists of problem-focused and emotion-focused methods.

The theoretical assumptions assert "how people cope varies in relation to the demands and constraints of the context and also in relation to changes in those demands and constraints as an encounter unfolds" (Folkman & Lazarus, 1988, p. 13). People vary their coping efforts according to their situational appraisal of control. Problem-focused methods of coping are more often used in circumstances in which the outcomes are changeable in contrast to the use of emotion-focused strategies of coping that are more often used in situations that are perceived to be immutable.

Defining the critical incident is critical to the proper administration of the WOC. Folkman and Lazarus (1988) recommend that subjects select their own focal encounter with the following instructions given with the assessment,

> Take a few moments and think about the most stressful situation you have experienced in the past week. By 'stressful' we mean a situation that was difficult or troubling to you, either because you felt distressed about what happened, or because you had to use considerable effort to deal with the situation (Folkman & Lazarus, 1988, p. 31).

The more the researcher is able to learn about the context of the most disturbing incident, the more interpretable will be the scores of the instrument. To elicit the primary appraisal of what was at stake regarding the critical incident, the subject should be asked to describe briefly in writing who was involved, what happened, what made the situation stressful, and what the options for coping were. This information was acquired during the background demographic segment of the survey. A copy of the WOC is located in Appendix F.

Summary

The purpose of this study was to investigate the level of traumatic stress symptoms in fire/EMS professionals working in an urban North Carolina fire/EMS system. Furthermore, we sought to identify coping styles of fire/EMS providers that mitigate the impact of traumatic stress symptomatology associated with exposure to personally disturbing incidents.

A variety of survey instruments were researched. Four instruments were identified to assess traumatic stress symptomatology and coping methods of fire/EMS professionals. The survey included a background/demographic questionnaire (BDQ), the revised Impact of Event Scale (IES-R), the 28-item General Health Questionnaire (GHQ), and the Ways of Coping Questionnaire (WOC). A pilot study was conducted with a small sample within the fire/EMS system to ensure the survey was functional, subjects could navigate the survey layout, and the questions were comprehendible. After analysis, the survey instruments appeared to have good reliability and validity.

Three research hypotheses were investigated in this study. The first hypothesis stated that there is no significant relationship between the subjective level of distress of fire/EMS professionals involved with personally disturbing incidents and their level of traumatic stress symptomatology. To answer this hypothesis we examined the relationship between the subjective level of traumatic stress symptomatology in fire/EMS providers to seven different PDIs and their level of traumatic stress symptomatology. The second hypothesis was to differentiate the association between the demographic data and the traumatic

stress symptomatology of fire/EMS professionals. The objective of the second hypothesis was to differentiate the association between the demographics and the traumatic stress symptomatology of fire/EMS professionals. The third hypothesis was to distinguish the relationship between the traumatic stress symptomatology of fire/EMS professionals and their choice of coping method even after controlling the effect of the exposure to personally disturbing incident.

CHAPTER FOUR: FINDINGS

This chapter presents the results of the current study, including demographic information with descriptive statistics and preliminary data analyses, followed by results of the hypotheses testing.

Demographics

A total of 180 subjects completed the survey. Seventy-two (40%) were between the ages of 30 to 39, 54 (30%) were between the ages of 40 to 49, and 34 (19%) were between the ages of 18 to 29. The majority of the participants were White (74%) and the remaining 26%, 18% were African American, 3% were Native American, 1% were Asian, 1% were Hispanic, and 3% were non-specific in their ethnicity. One hundred fifty eight (88%) of the subjects were male and 22 (12%) were female. Fifty nine percent of the participants reported their marital status as married, while 27% reported being single, 8% reported being divorced, 2% were separated, 2% were engaged, and 1% were widowed. Sixty three (35%) of the participants reported serving in the position as firefighter/EMT, 51 (28%) EMT-Paramedic, 25 (14%) firefighter/EMT-Intermediate, 17 (9%) EMT, 15 (8%) EMT-Intermediate, and 9 (5%) firefighter/EMT-Paramedic. The total number of years in emergency services ranged from 6 months to 39 years. The mean years of emergency services experience for this study group was 13 years (M=13.29, SD=8.51). Table 1 displays the demographic characteristics described above.

Table 1

Demographic Characteristics of Durham City/County Fire/EMS Professionals

Characteristic	N	P
Age categories		
18 to 29	34	18.9
30 to 39	72	40.0
40 to 49	54	30.0
50+	20	11.1
Gender		
Female	22	12.2
Male	158	87.8
Ethnicity		
African American	33	18.3
Asian	2	1.1
European/American Caucasian	134	74.4
Latino/Hispanic	1	0.6
Native American	5	2.8
Other	5	2.8
Marital Status		
Single	49	27.2
Separated	4	2.2
Married	107	59.4
Divorced	15	8.3
Widowed	1	0.6
Other	4	2.2
Fire/EMS Position		
EMT/Basic	17	9.4
EMT/Intermediate	15	8.3
EMT/Paramedic	51	28.3
Firefighter/EMT	63	35.0
Firefighter/EMT-I	25	13.9
Firefighter/EMT-P	9	5.0

Preliminary Data Analysis

A total sample of 183 of the 500 emergency services professionals were invited to participate in this study. Three of the 183 surveys distributed were returned incomplete and were not used in the data analysis. Thus, the actual sample size was 180 subjects, representing a return rate of 98%.

In filling out the background demographic questionnaire the fire/EMS personnel reported on the following variables: age, gender, ethnicity, marital status, fire/EMS position, self-reported psychological health, and self reported relational/work performance. The first series of questions from the background questionnaire asked the emergency services professionals to indicate the extent to which fire/EMS work had affected their health and other aspects of their lives over the past four weeks. They were to answer on a 0-3 scale, with 3 being an "extremely" significant change and 0 being a "not at all" modification.

One hundred twenty five (69%) subjects reported no effect on the depression subscales while performing fire/EMS work. One hundred twelve (62%) fire/EMS personnel indicated no effect of poor health was related to working in fire/EMS. Sixty four (36%) of the participants reported considerable or extreme effect on the fatigue subscales while working in fire/EMS. Forty (22%) subjects reported considerable or extreme insomnia associated with fire/EMS work in the previous 4 weeks. Table 2 summarizes the participants' responses regarding their experiences with psychological health while working in emergency services.

Table 2

Self-reported Effects of Fire/EMS Work on the Psychological Health Reported on the Background Demographic Questionnaire (BDQ)

Characteristic	Not at all		Slightly		Considerably		Extremely	
	N	P	N	P	N	P	N	P
Fatigue	42	23.3	74	41.1	55	30.6	9	5.0
Anxiety	102	56.6	57	31.7	19	10.6	2	1.1
Depression	125	69.4	47	26.1	5	2.8	3	1.7
Insomnia	73	40.6	67	37.2	32	17.8	8	4.4
Poor health	112	62.2	48	26.7	18	10.0	2	1.1
Irritability	80	44.4	74	41.1	17	9.4	9	5.0

In the previous four weeks, the consequence of fire/EMS work on work performance was reported as: 131 (73%) reported no effect, 32 (18%) indicated a slight effect, 16 (9%) reported a considerable effect and 1 (0.6%) indicated an extreme effect. The effect of fire/EMS work on making judgments about work related issues was indicated as: 138 (77%) reported no effect, 33 (18%) indicated a slight effect and 9 (5%) reported considerable effect. These results are reported in Table 3.

The effect of fire/EMS work on work relationships was reported as follows: 121 (67%) indicated no effect, 50 (27%) reported a slight effect, 7 (4%) indicated a considerable effect and 2 (1%) reported an extreme effect. The effect of fire/EMS work on family relationships was reported as: 108 (60%) indicated no effect, 53 (29%) reported a slight effect, 17 (9%) indicated a considerable effect and 2 (1%) reported an extreme effect. The effect of friendships not work related were described as: 117 (65%) reported no effect, 48 (27%) indicated a slight effect, 12 (7%) reported considerable effect and 3 (2%) indicated an extreme effect. These results are reported in Table 4.

Fire/EMS professionals were surveyed regarding their experience of dealing with multiple exposures to PDIs during their career in emergency services. One hundred seven (60%) fire/EMS professionals reported the more often they had to deal with personally disturbing incidents the better they coped with them. Eight (4%) indicated they coped "less well" after exposure to a PDI. Forty-five (25%) reported no effect after exposure to a PDI. Twenty (11%) subjects indicated that it was "more difficult" to deal with PDIs after exposure.

Table 3

Self-reported Effects of fire/EMS Work on Work Performance Reported on the Background Demographic Questionnaire (BDQ)

Characteristic	Not at all		Slightly		Considerably		Extremely	
	N	P	N	P	N	P	N	P
Work performance	131	72.8	32	17.8	16	8.9	1	0.6
Judgment at work	138	76.7	33	18.3	9	5.0	0	0.0

Table 4

Self-reported Effects of fire/EMS Work on Relationships Reported on the Background Demographic Questionnaire (BDQ)

Characteristic	Not at all		Slightly		Considerably		Extremely	
	N	P	N	P	N	P	N	P
Colleagues	121	67.2	50	27.8	7	3.9	2	1.1
Family	108	60.0	53	29.4	17	9.4	2	1.1
Friendships not work related	117	65.0	48	26.7	12	6.7	3	1.7

Table 5 details the self-reported coping experiences of fire/EMS providers after multiple exposures to personally disturbing incidents.

The duration of distress following a personally disturbing incident (PDI) was reported as follows: a few hours (n=40; 22%), about 1 day (n=16; 9%), a few days (n=34; 19%), about 1 week (n=14; 8%), a few weeks (n=9; 5%), about 1 month (n=6; 3%), a few months (n=6; 3%) and longer (n=11; 6%). Table 6 reveals the self-reported duration of distress after exposure to a PDI.

Overall, 137 (76%) fire/EMS professionals self-reported on the BDQ experiencing a personally disturbing incident within the past six months. The BDQ inquired about the significance of 7 previously researched personally disturbing incidents (PDIs) (Alexander and Kline, 2001; Ashikyan, 2005). While serving in their role as a fire/EMS provider, the participants were to assign subjective numerical value on a 0-5 scale, with 5 being the "most stressful," 1 indicating "least stressful" and 0 "not experienced." Forty eight (27%) of the emergency services professionals indicated the "most stressful" PDI as "death of a child."

The authors of the GHQ-28 recommend scores of five and above to identify "caseness" for traumatic stress symptomatology with maximum sensitivity and specificity (Goldberg and William, 1998; Alexander and Kline, 2001). This recommendation was followed in this study. For the total sample of 180 respondents, the mean score on the GHQ-28 was 3.34 and the standard deviation 4.60. Fire/EMS providers who had reported experiencing a PDI in the past six

Table 5

Self-reported Coping Experience after Multiple Exposures to Personally Disturbing Incidents reported on the Background Demographic Questionnaire (BDQ)

Better		Less Well		No Effect		More Difficult	
N	P	N	P	N	P	N	P
107	59	8	4	45	25	20	11

Table 6

Self-report on Duration of Distress after Exposure to a Personally Disturbing Incident Reported on the Background Demographic Questionnaire (BDQ)

Duration of Distress	N	P
A Few Hours	40	22
About 1 Day	16	9
A Few Days	34	19
About 1 Week	14	8
A Few Weeks	9	5
About 1 Month	6	3
A Few Months	6	3
Longer	11	6

months, revealed mean GHQ-28 scores of 3.62 (SD=4.86); in contrast to those who had not experienced a PDI, revealed a mean GHQ-28 score of 2.48 (SD=3.61). A t-test revealed no significance between fire/EMS providers who experienced a PDI versus those who did not experience at PDI.

Caseness for traumatic stress disorders on the GHQ-28 was recorded in 52 subjects (29%). Of the sample, paramedics reported the highest mean GHQ-28 score of 5.41 (SD=5.69). Firefighter/EMTs reported the lowest mean GHQ-28 score of 2.10 (SD=4.48). A t-test analysis for this difference was significant ($t = 3.9, < .01$). These t-test results are reported in Table 7.

Findings Related to Hypotheses

Findings Related to Research Hypothesis #1

The first hypothesis stated that there is no significant relationship between the subjective level of distress of fire/EMS professionals involved with personally disturbing incidents and their level of traumatic stress symptomatology. To answer this hypothesis we examined the levels of traumatic stress symptomatology in fire/EMS providers who reported distress to seven different PDIs. We measured their subjective levels of distress by adding and averaging their total score from the PDI self-report section in the BDQ.

Overall, there is a significant relationship between the subjective levels of distress of fire/EMS professionals across five of the seven personally disturbing

Table 7

T-test Analysis of Comparison of Differences on Caseness for Traumatic Stress between EMT/Paramedic and Firefighter/EMT

Position	N	GHQ-28 M	GHQ-28 SD	Sig. (2-tailed)	t
EMT/Paramedic	51	5.41	5.69	.000	3.90
Firefighter/EMT	63	2.10	3.29	.000	

incidents and the level of traumatic stress symptomatology. There is a significant relationship between the levels of subjective distress from a PDI designated as a "death of a child" exposure and the level of traumatic stress symptomatology at a .05 level. A Pearson correlation revealed a significant relationship (r=.16, p=.03) between "death of a child" and traumatic stress symptomatology, as measured with the GHQ-28.

There is a significant relationship between the levels of subjective distress from a PDI designated as a "care of family/friend" exposure and the level of traumatic stress symptomatology at a .01 level. A Pearson correlation revealed a significant relationship (r=.22, p=.00) between a PDI designated as "care of friend/family" exposure and traumatic stress symptomatology, as measured with the GHQ-28.

There is a significant relationship between the levels of subjective distress from a PDI designated as a "care of disaster patients" exposure and the level of traumatic stress symptomatology at a .01 level. A Pearson correlation revealed a significant relationship (r=.24, p=.00) between a PDI designated as "care of disaster patients" exposure and traumatic stress symptomatology, as measured with the GHQ-28.

There is a significant relationship between the levels of subjective distress from a PDI designated as a "victims of crime" exposure and the level of traumatic stress symptomatology at a .01 level. A Pearson correlation revealed a significant relationship (r=.23, p=.00) between a PDI designated as "victims of

crime" exposure and traumatic stress symptomatology, as measured with the GHQ-28.

There is a significance relationship between the levels of subjective distress from a PDI designated as a "burn victims" exposure and the level of traumatic stress symptomatology at a .01 level. A Pearson correlation revealed a significant relationship (r=.16, p=.03) between a PDI designated as "burn victims" exposure and traumatic stress symptomatology, as measured with the GHQ-28.

There is no significance relationship between the levels of subjective distress from two PDIs designated as "accident patients" and "massive traumatic injury victims" exposure and the level of traumatic stress symptomatology. The results of the Pearson correlation are reported in Table 8.

Findings Related to Research *Hypothesis #2*

The second hypothesis stated that there would be no significant relationship between the demographic data and the traumatic stress symptomatology of fire/EMS professionals. The objective of the second hypothesis was to differentiate the association between the demographics and the traumatic stress symptomatology of fire/EMS professionals.

There is no significant relationship between the different demographic factors and traumatic stress symptomatology. Spearman rho analyses were used to associate the demographic data with the traumatic stress symptomatology of

Table 8

Subjective Level of Distress in Fire/EMS Professionals and Self-reported Traumatic Stress Symptomatology

		Death of a Child	Care of Friend / Family	Care of Disaster Patients	Accident Patients	Victims of crime	Burn Victims	Massive Traumatic Injury Victims
GHQ score	Pearson Correlation	0.16*	0.22**	0.24**	0.10	0.23**	0.16**	0.10
	Sig. (2-tailed)	0.03	0.00	0.00	0.17	0.00	0.03	0.17
	N	180	180	180	180	180	180	180

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

fire/EMS providers. Results indicated age (r_s=.015, p=.844), gender (r_s=-0.124, p=.098), ethnicity (r_s=.079, p=.295), marital status (r_s=.046, p=.536), and position (r_s=-.098, p=.192) were not correlated to the traumatic stress symptomatology of fire/EMS professionals.

Pearson correlation analysis was performed with the years of experience and traumatic stress symptomatology of fire/EMS professionals. The results indicate years of experience was not correlated to the traumatic stress symptomatology (r=.114, p=.128). Table 9 specifies the results of the two-tailed Spearman and Pearson correlation tests.

Findings Related to Research Hypothesis #*3*

The third hypothesis stated that there would be no significant relationship between the traumatic stress symptomatology of fire/EMS professionals and their choice of coping methods even after controlling the effect of exposure to personally disturbing incidents. To predict which coping methods mitigate traumatic stress symptomatology in fire/EMS professionals, a linear regression procedure was performed to discover significant outcomes. To control for the effect of exposure to a personally disturbing incident, the Total Distress variable was created. The Total Distress variable was created by totaling and averaging each fire/EMS professionals' subjective PDI distress level from the BDQ.

Table 9

The Relationship Between Demographics and Traumatic Stress Symptomatology

		Age	Gender	Ethnicity	Marital Status	Position		Years of Experience
GHQ score	Spearman Correlatio	0.015	- 0.124	0.079	0.046	- 0.098	Pearson Correlation	0.114
	Sig. (2-tailed)	0.844	0.098	0.295	0.536	0.192	Sig. (2-tailed)	0.128
	N	180	180	180	180	180		180

*. Correlation is significant at the 0.05 level (2-tailed).

Pearson correlation analysis revealed significant relationships between the following coping method and the traumatic stress symptomatology: Confrontive Coping, Accepting Responsibility, Self-control, Escape/Avoidance, and Distancing, all at .01 levels. The Pearson correlation between Positive Reappraisal, Problem Solving and Social Support and traumatic stress symptomatology measured by the GHQ-28 was not significant. Linear regression analysis revealed that the coping method Positive Reappraisal mitigated traumatic stress symptomatology. However, the relationship was weak and statistically insignificant ($\beta = -0.104$; $p = 0.16$). The results of the Pearson correlation are reported in Table 10.

The Pearson correlation between coping method Escape/Avoidance and traumatic stress symptomatology (GHQ-28) was .48, which was significant at the .01 level. Linear regression analysis revealed that the coping method Escape/Avoidance was a highly significant predictor of increasing traumatic stress symptomatology scores ($\beta = 0.45$, $p = 0.00$). The Escape/Avoidance coping method significantly increased ($p < .01$) an additional 18.7% of the variance explaining the traumatic stress symptomatology after accounting for the effect of the disturbance due to the exposure of personally disturbing incidents. The combination of effect of disturbance and the Escape/Avoidance coping method explained 24% of the variance of traumatic stress symptomatology.

The Pearson correlation between coping method Accepting Responsibility and traumatic stress symptomatology (GHQ-28) was .382, which was significant

Table 10

Pearson Correlation Analysis: Coping Method and Traumatic Stress Symptomatology

Coping Method		GHQ score
WOC Problem Solving score	Pearson Correlation	0.092
	Sig. (2-tailed)	0.221
	N	180
WOC Confrontive Coping score	Pearson Correlation	.298**
	Sig. (2-tailed)	.000
	N	180
WOC Social Support score	Pearson Correlation	0.103
	Sig. (2-tailed)	0.172
	N	177
WOC Accepting Responsiblity score	Pearson Correlation	.382**
	Sig. (2-tailed)	.000
	N	179
WOC Self Control score	Pearson Correlation	.292**
	Sig. (2-tailed)	.000
	N	180
WOC Escape Avoidance score	Pearson Correlation	.480**
	Sig. (2-tailed)	.000
	N	180
WOC Distancing score	Pearson Correlation	.200**
	Sig. (2-tailed)	.007
	N	180
WOC Positive Reappraisal score	Pearson Correlation	-0.058
	Sig. (2-tailed)	0.436
	N	180

**. Correlation is significant at the 0.01 level (2-tailed).

at the .01 level. Linear regression analysis revealed that the coping method Accepting Responsibility was a significant predictor of increasing traumatic stress symptomatology scores ($\beta = 0.35$, $p = 0.00$). This coping method significantly added ($p < .01$) another 11.4% of the variance explaining the traumatic stress symptomatology after accounting for the effect of the disturbance due to the exposure of personally disturbing incidents. Thus the combination of distress and Accepting Responsibility coping method accounted for 17% of the variance in traumatic stress symptomatology.

The Pearson correlation between coping method Confrontive Coping and traumatic stress symptomatology (GHQ-28) was .298, which was significant at the .01 level. Linear regression analysis revealed that the coping method Confrontive Coping was a significant predictor of increasing traumatic stress symptomatology scores ($\beta = 0.25$, $p = 0.00$). This coping method significantly added ($p < .01$) another 5.8% of the variance explaining the traumatic stress symptomatology after accounting for the effect of the disturbance due to the exposure of personally disturbing incidents. Thus the combination of distress and Confrontive Coping method accounted for 12% of the variance in traumatic stress symptomatology.

The Pearson correlation between coping method Self Control and traumatic stress symptomatology (GHQ-28) was .292, which was significant at the .01 level. Linear regression analysis revealed that the coping method Confrontive Coping was a significant predictor of increasing traumatic stress

symptomatology scores (β = 0.24, p = 0.00). This coping method significantly added (p < .01) another 5.4% of the variance explaining the traumatic stress symptomatology after accounting for the effect of the disturbance due to the exposure of personally disturbing incidents. Thus the combination of distress and Self Control coping method accounted for 11% of the variance in traumatic stress symptomatology.

The Pearson correlation between coping method Distancing and traumatic stress symptomatology (GHQ-28) was .200, which was significant at the .01 level. Linear regression analysis revealed that the coping method Confrontive Coping was a significant predictor of increasing traumatic stress symptomatology scores (β = 0.16, p = 0.03). This coping method significantly added (p < .05) another 2.6% of the variance explaining the traumatic stress symptomatology after accounting for the effect of the disturbance due to the exposure of personally disturbing incidents. Thus the combination of distress and Self Control coping method accounted for 8% of the variance in traumatic stress symptomatology. The results of the linear regression are reported in Table 11.

To predict the odds of traumatic stress symptomatology related to specific coping methods, a logistic regression procedure was performed to discover the significant outcomes. To appropriately interpret a logistic regression, Portney & Watkins (2000) explain:

> It is more useful to interpret logistic regression coefficients in terms of odds rather than probability. Odds tell us how much more

Table 11

Linear Regression Analysis: The Relationship between Coping Methods of Fire/EMS Professionals and Traumatic Stress Symptomatology

	Unstandardized Coefficients		Standardized Coefficients			
Coping Method	B	Std. Error	Beta	t	Sig.	R^2
Problem Solving	0.048	0.089	0.040	0.541	0.59	0.06
Confrontive Coping	0.311	0.091	0.251	3.411	0.00	0.12
Social Support	0.056	0.094	0.045	0.596	0.52	0.06
Accepting Responsibility	0.563	0.115	0.345	4.901	0.00	0.17
Self Control	0.234	0.071	0.243	3.293	0.00	0.11
Escape/Avoidance	0.427	0.064	0.448	6.624	0.00	0.24
Distancing	0.200	0.089	0.164	2.243	0.03	0.08
Positive Reappraisal	- 0.103	0.073	- 0.104	- 1.416	0.16	0.07

> likely it is than an individual belongs to the target group than the reference group. Odds greater than 1.00, the individual is more likely to belong to the target group; conversely, with odds less than 1.00, the individual is more likely to belong to the reference group. The odds ratio is used to estimate the odds of membership in the target group, given the presence of specific independent variables. A significant odds ratio will not contain the null value, 1.0, within the confidence interval (p. 601).

The target group was identified as subjects with diagnosable traumatic stress symptomatology, GHQ-28 scores of 5 or more points. The reference group was classified as subjects with no diagnosable traumatic stress symptomatology, GHQ-28 scores of 4 or less points.

As reported in Table 12, the findings were significant, suggesting that there is a substantial difference between the utilization of different coping methods and the traumatic stress symptomatology of fire/EMS providers. In Table 12, the "constant" is the statistical reference point for determining the probability of the subjects with diagnosable traumatic stress symptomatology.

Significant results were discovered with fire/EMS professionals who used Escape/Avoidance (9.4%; n=17) as their primary coping method. These fire/EMS providers were 19 times more likely to experience traumatic stress symptomatology. Those who used Confrontive Coping (4.4%; n=8) were 10 times more likely to suffer traumatic stress. Fire/EMS providers who used Self Control

Table 12

Logistic Regression: The Relationship between Coping Methods of Fire/EMS Professionals and Traumatic Stress Symptomatology

Coping Method	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
No Coping Method Reported	-.807	1.145	.497	1	.481	.446	.047	4.210
Problem Solving	.303	.641	.223	1	.637	1.353	.385	4.752
Confrontive Coping	2.269	.876	6.703	1	.010	9.667	1.735	53.845
Social Support	.777	.832	.871	1	.351	2.175	.426	11.116
Self Control	1.190	.572	4.334	1	.037	3.287	1.072	10.075
Escape/Avoidance	2.937	.749	15.360	1	.000	18.850	4.340	81.864
Distance	-.640	1.151	.309	1	.578	.527	.055	5.035
Constant	-1.758	.484	13.178	1	.000	.172		

(26.1%; n=47) were 3 times more likely to experience traumatic stress symptomatology.

Summary of Research Findings

A survey of 180 fire/EMS professionals revealed concerns about the relationships between subjective levels of distress of fire/EMS professionals involved with personally disturbing incidents, coping methods and traumatic stress symptomatology. Overall, 137 (76%) fire/EMS professionals reported in the BDQ experiencing a personally disturbing incident. Of the 180 fire/EMS providers, the GHQ-28 revealed symptomatology for traumatic stress disorders in 52 subjects (29%).

The first hypothesis stated that no significant relationship existed between the subjective level of distress of fire/EMS professionals involved with personally disturbing incidents and their level of traumatic stress symptomatology. There is a significant relationship between the subjective levels of distress of fire/EMS professionals involved with different types of personally disturbing incidents. The level of traumatic stress symptomatology was correlated with five of the seven personally disturbing incidents.

The second hypothesis stated that there would be no significant relationship between the demographic data and the traumatic stress symptomatology of fire/EMS professionals. There is no significant relationship between age, gender, ethnicity, marital status, position or years of experience.

The third hypothesis indicated that there would be no significant relationship between the traumatic stress symptomatology of fire/EMS professionals and their choice of coping method even after controlling the effect of the exposure to personally disturbing incident. Linear regression analysis revealed that the coping method Positive Reappraisal mitigated traumatic stress symptomatology. However, the relationship was weak and statistically insignificant. Additionally, linear regression analysis revealed five coping methods that were predictors for increasing traumatic stress symptomatology. These five coping methods were: Confrontive Coping, Accepting Responsibility, Self Control, Avoidance and Distancing. Two coping methods were not identified as predictors of increasing traumatic stress symptomatology. These two coping methods were: Problem Solving and Social Support.

Fire/EMS providers who used Escape/Avoidance as their primary method of coping (9.4%; n=17) were 19 times more likely to suffer traumatic stress symptomatology. In addition, those who used Confrontive Coping (4.4%; n=8) were 10 times more likely to experience traumatic stress.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to investigate the level of traumatic stress symptoms and coping methods of fire/EMS professionals working in an urban North Carolina fire/EMS system. This study examined coping styles of fire/EMS providers that mitigate the traumatic stress symptomatology associated with exposure to personally disturbing incidents. The 28-item General Health Questionnaire (GHQ-28) was used to determine the level of traumatic stress symptomatology. The Ways of Coping Questionnaire (WOC) was used to distinguish the coping methods used by fire/EMS professionals. The sample size included 180 fire/EMS professionals. Several conclusions and suggestions for further research can be derived from this study.

Conclusions Related to Findings

Conclusions Related to Research Hypothesis #1

The first hypothesis stated that no significant relationship existed between the subjective level of distress of fire/EMS professionals involved with personally disturbing incidents and their level of traumatic stress symptomatology. There is a significance relationship between the subjective levels of distress of fire/EMS professionals involved with different types of personally disturbing incidents. The level of traumatic stress symptomatology was correlated with five personally disturbing incidents.

One conclusion can be offered based upon the first research hypothesis. The level of subjective distress of fire/EMS professionals' exposure to certain PDIs was correlated to their level of traumatic stress symptomatology. Five PDIs were identified as significant variables leading toward traumatic stress symptomatology. These five PDIs included: death of a child, care of friend/family, care of disaster victims, care of crime victims and burn victims. These five detrimental PDIs were identified in a previous study by Alexander and Kline (2001).

The death of a child PDI is detrimental because fire/EMS professionals perceive children as innocent and helpless. Pediatric related calls universally create more stress because children are medically managed different from adults. Additionally, when fire/EMS providers are involved with child death, often the death could have been prevented.

Most fire/EMS professionals respond to individuals who are unknown to them. The care of friend/family is detrimental because of the nature of the intimate relationship. The care of disaster victims is detrimental due to magnitude of the incident and perhaps the victim's unspoken request to return life to normal. The care of crime victims is detrimental because the innocent and helpless are unnecessary injured or killed. The care of burn victims is detrimental because of the severity of the pain the victim suffers and the remaining odor of burnt flesh after a PDI exposure.

Two PDIs were not linked to traumatic stress symptomatology. These two PDIs were: accident victims and massive traumatic injury victims. Within this

fire/EMS system, more than 160 accident victims were treated monthly. This frequent exposure perhaps inoculates fire/EMS providers, in this study, from the detrimental effects of PDIs involving accident victims. Fire/EMS systems that respond to less accident victim PDIs may reveal a different level of subjective distress for fire/EMS professionals.

Massive traumatic injury victims would relate to rural farming communities or industrial communities where heavy machinery incidents can result in massive traumatic injury PDIs. In this study, the community of the fire/EMS system is urbanized with limited rural or industrial type incidents. Fire/EMS systems that respond in rural or industrialized communities may reveal a different level of subjective distress for fire/EMS providers.

Overall, this finding suggests a strategy for decreasing the potential for traumatic stress symptomatology as identifying the level of subjective distress of fire/EMS providers related to detrimental PDIs. Fire/EMS providers are interested in learning about their subjective levels of distress related to PDIs; however, opportunities to learn this information are nonexistent. Assisting fire/EMS professionals in understanding their personal subjective levels of distress and identifying their perceived detrimental PDIs are paramount to the psychological survival of fire/EMS professionals.

Conclusions Related to Research Hypothesis #2

The second hypothesis stated that there would be no significant relationship between the demographic data and the traumatic stress

symptomatology of fire/EMS professionals. There is no significant relationship between age, gender, ethnicity, marital status, position or years of experience. This study concluded the potential for traumatic stress symptomatology after exposure to a PDI cannot be differentiated based on age, gender, ethnicity, marital status, position or years of experience.

Fire/EMS professionals are human not super heroes. They pursue the field of emergency services to sustain life, serve and protect the community. The field of emergency services is where fire/EMS providers are called to serve their community in the midst of crisis. Fire/EMS professionals are not designed, nor any human, for constant exposure to personally disturbing incidents. The constant barrage of medical and trauma related PDIs come at a psychological price. Demographic factors such as age, gender, ethnicity, marital status, position or years of experience do not offer protection against the psychological trauma related to constant PDI exposures.

Conclusions Related to Research Hypothesis #3

The third hypothesis indicated that there would be no significant relationship between the traumatic stress symptomatology of fire/EMS professionals and their choice of coping method even after controlling the effect of the exposure to personally disturbing incident. Linear regression analysis revealed that the coping method Positive Reappraisal mitigated traumatic stress symptomatology. However, the relationship was weak and statistically

insignificant. Additionally, linear regression analysis revealed five coping methods that were predictors for increasing traumatic stress symptomatology. These five coping methods were: Confrontive Coping, Accepting Responsibility, Self Control, Escape/Avoidance and Distancing. Two coping methods were not identified as predictors of increasing traumatic stress symptomatology. These two coping methods were: Problem Solving and Social Support.

The results of this study demonstrated that when detrimental coping methods were utilized, fire/EMS providers experienced more traumatic stress symptomatology. The most detrimental coping method was Escape/Avoidance. In a previous study, Alexander and Kline (2001) indicated avoidance was used by 82% of EMS professionals and 59% reported avoidance coping was not helpful. Linking the detrimental coping methods with increased potential for experiencing traumatic stress symptomatology is important for fire/EMS professionals to understand regarding the specific detrimental coping methods and its effects on traumatic stress symptomatology.

Escape/Avoidance, Distancing and Confrontive coping methods are steeped in a traditional philosophy within emergency services that fire/EMS providers are hardy individuals with "tough skins" and "nothing is supposed to bother them." However, fire/EMS personnel are human and have emotions. Exposing the dangers of the avoidance, distancing and confrontive coping are vital to challenging the harmful traditional philosophy within emergency services.

Accepting Responsibility coping is interrelated to the goal-driven behavior of fire/EMS professionals. Accepting Responsibility may be detrimental when fire/EMS providers accept too much responsibility related to the poor outcome of an incident or a PDI victim.

Self Control coping is the concept of normalizing emotions with an exposure to a PDI. Some critical incident counselors offer these words to fire/EMS providers, "You are experiencing a normal reaction to an abnormal event." This "normalization" may be detrimental in never allowing the fire/EMS professional the opportunity to truly express their emotions related to PDI exposures. While these primary copings methods are related to increasing traumatic stress symptomatology, more research is needed to determine if mitigation of traumatic stress symptomatology of fire/EMS professionals is associated with the utilization of a single or multiple methods of coping.

One conclusion from this analysis reveals that the profession of emergency services is simply a psychologically hazardous work zone. Regardless of the coping method used, fire/EMS professionals will likely experience traumatic stress symptomatology above the baseline of the normal population.

Implications

Implications for Practice

One implication for practice is the need for additional research to determine if these findings are replicated with other fire/EMS agencies. Similar studies of fire/EMS personnel analyzing the psychological health and coping methods have been limited. Based on this sample, it would seem that urban fire/EMS professionals and agencies would benefit from evaluating the psychological health and effective coping methods of their providers. Potential results of replicated studies investigating the psychological health may lead to improving psychological health, decreasing burnout and enhancing occupation satisfaction.

A second implication for practice is assessing fire/EMS professionals regarding detrimental coping methods to counter traumatic stress symptomatology. Prior to an exposure to a personally disturbing incident, a baseline assessment could be established for each fire/EMS provider to determine the primary coping methods utilized and the psychological health. More research, with other fire/EMS agencies comparing coping method and psychological health baselines, would be helpful in revealing the detrimental coping methods of fire/EMS professionals.

Implications for Research

Several suggestions for future research have been made mainly due to the lack of current coping method and psychological health research with fire/EMS professionals. Future research could utilize a similar research design as used in this study but with a larger sample with a variety of different types of fire/EMS agencies. A larger sample might change the detrimental coping methods associated with psychological health.

Future research could also inquire about expanding the exposure to personally disturbing incidents greater than the six month time frame. Although some researchers indicated recall of an incident after six months to be very limited, several fire/EMS professionals reported that although they had not been exposed to a personally disturbing incident in the past six months; they could recall a PDI exposure sometimes greater than six years with exact detail that left the researcher with the impression that PDI events greater than six months should be investigated.

Other future studies could follow fire/EMS professionals at specific time frames following an exposure to a PDI. A suggested assessment might include using the WOC and GHQ-28 with a fire/EMS provider exposed to a PDI at 24 hours, 1 week, 30 days, 60 days, and 90 days to evaluate their coping method and psychological health.

Recommendations

Two recommendations are made based on the findings of this study. First, fire/EMS agencies should establish psychological health standards for fire/EMS professionals. Second, fire/EMS agencies should create educational seminars that offer practical strategies that support fire/EMS providers in the avoidance of detrimental coping methods.

Regarding the first recommendation, fire/EMS agencies should establish psychological health standards for their employees. Psychological health standards can be ascertained through assessment protocols for psychological health and coping methods of fire/EMS providers. Assessment protocols will determine individual and agency benchmarks for psychological health and correlating detrimental coping methods.

Assessments reports will be given to each fire/EMS professional. The assessment reports will provide an overview of their current psychological health and differentiate coping methods utilized. The fire/EMS agency will be given a cumulative departmental report and confidential individual report regarding the psychological health and coping methods of their entire personnel to establish psychological health standards. Once psychological health standards have been established, these can become benchmarks for future comparison after fire/EMS providers are exposed to a personally disturbing incident.

If the fire/EMS provider, their peers or administration begin observing changes in psychological health after an exposure to a personally disturbing incident, a psychological health assessment can be administered and compared with the individual's pre-PDI exposure scores. If significant changes in psychological health are observed, appropriate referral to licensed mental health provider can be considered.

Concerning the second recommendation, fire/EMS agencies should create educational seminars that offer practical strategies that support fire/EMS providers in the avoidance of detrimental coping methods. One potentially serious threat to fire/EMS providers is traumatic stress disorders. Current research suggests traumatic stress disorders may be mitigated by learning coping methods (Schiraldi, 2007; Bonanno, 2004; Manne & Sandler, 1984).

A scenario-based coping methods seminar will allow EMS providers to learn strategies and see the benefits of developing coping methods that will inoculate EMS providers with "emotional armor" to protect them from the threat of traumatic stress disorders. Course objectives for the seminar include: (a) evaluate the psychological cost to fire/EMS professionals for providing emergency medical care, (b) identify the subjective stress levels related to detrimental PDIs, (c) expose the detrimental coping methods of EMS providers, (d) share strategies on developing resiliency and (e) discuss methods for assessing the coping methods and psychological health of EMS providers.

Initial funding for the establishment of psychological health standards, identifying coping methods of fire/EMS providers and offering scenario-based coping methods seminars could be achieved with a grant from the Federal Emergency Management Administration, the Department of Homeland Security. Fire/EMS agencies interested in pursuing such grants are encouraged to contact the United States Department of Homeland Security or the Department of Health and Human Services.

As fire/EMS agencies establish psychological health standards and identify the most advantageous coping methods for fire/EMS professionals, the potential results could be observed in improving psychological well-being, enhancing job satisfaction, and decreasing the potential for burnout. Future research will be needed to validate these promising outcomes.

Summary

Fire/EMS professionals are human not super heroes. They pursue the field of emergency services to sustain life, serve and protect the community. The field of emergency services is where fire/EMS providers are called to serve their community in the midst of crisis. Fire/EMS professionals are not designed, nor any human, for constant exposure to personally disturbing incidents. The constant barrage of medical and trauma related PDIs come at a psychological price.

One significant stressor for fire/EMS providers involves exposure to personally disturbing incidents (PDI). This study provides some clarity by identifying the subjective distress associated with certain PDIs and pinpointing detrimental coping methods of fire/EMS personnel through scores on the 28-item General Health Questionnaire and Ways of Coping Questionnaire.

There is a significance relationship between the subjective levels of distress of fire/EMS professionals involved with different types of personally disturbing incidents. Five PDIs were identified as significant variables leading toward traumatic stress symptomatology.

There is no significant relationship between age, gender, ethnicity, marital status, position or years of experience. This study concluded the potential for traumatic stress symptomatology after exposure to a PDI cannot differentiated based on age, gender, ethnicity, marital status, position or years of experience.

There is a significant relationship between the traumatic stress symptomatology of fire/EMS professionals and their choice of coping method even after controlling the effect of the exposure to personally disturbing incident. Linear regression analysis revealed five coping methods that were predictors for increasing traumatic stress symptomatology.

The results in this study are preliminary steps in understanding the psychological health and coping methods of fire/EMS professionals. More research is needed to establish the baseline for psychological health and validate the optimal coping methods of fire/EMS providers.

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APPENDIX A

Institutional Permission Letter

Institutional Permission Letter

On behalf of the Parkwood Fire Department in Durham, NC, I provide permission to William Mark Holland to conduct research in our department. The purpose of this study will be to investigate the coping methods and the prevalence of traumatic stress disorder symptoms of the 100+ fire/Emergency Medical Services (EMS) professionals working in the Parkwood Fire/Rescue/EMS Department. Research studies with similar populations have concluded that fire/EMS professionals who were exposed to critical incidents had significantly higher rates of depression, acute stress disorder, and post traumatic stress disorder than those not exposed to similar critical incidents. The data will be gathered through a confidential & anonymous survey. The goal of this program is to identify & develop positive coping methods of fire/EMS providers that will improve psychological well-being, enhance job satisfaction, and decrease the potential for occupational burnout.

The department understands that the researcher has provided assurance that he will fully abide by the laws and regulations of the governing bodies that preside over the United States of America and the Institutional Review Board of Liberty University, including those that pertain to conducting research.

Mr. Holland's research will consist of, and be limited to, conducting a survey among the fire/EMS providers who regularly provide emergency medical care to the public within the Durham County/City limits. Our department is in possession of a copy of this survey. Also, no individual or personal information about the fire/EMS providers will be obtained, disclosed or published, and all results will be presented as aggregate, summary data.

On behalf of this department, I/we provide consent for the researcher to include the responses of fire/EMS providers in his data analysis. Our department is aware of the fact that it may request a copy of the results of this research by writing to the researcher at:

Mark Holland
3309 Six Forks Road
Raleigh, NC 27609

_____ _____

Date Chief Billy Colley
Parkwood Fire/Rescue/EMS

APPENDIX B

Informed Consent Form

INFORMED CONSENT FORM

I have been informed that this study involves research which will be conducted by Mark Holland, MDiv, LPC, a doctoral student at Liberty University. I understand that this project is designed to study traumatic stress symptoms, psychological health and coping methods of fire/EMS professionals. The goal of this study is to identify & develop positive coping methods of fire/EMS providers that will improve psychological well-being, enhance job satisfaction, and decrease the potential for occupational burnout. I have been asked to participate in this study because I am currently a fire/EMS professional working within the Durham County/City Fire/EMS system. I understand that my participation in this study will involve the completion of three questionnaires designed to measure traumatic stress symptoms, psychological health, and preferred coping methods. An additional questionnaire will ask about my background. I am aware that my involvement in this study will take approximately 30 minutes of my time (10 minutes: Overview of the study; 20 minutes: Approximate time needed to complete the survey).

I understand that I may refuse to participate or withdraw from this study at any time without penalty or loss of services that I am entitled to. I understand that my identity as a participant in this study will be kept in strict confidence and that no information that identifies me in any way will be released without my separate written approval. I am aware that all information that identifies me will be protected to the limits allowed by law.

I have been informed that only Mark Holland and Ron Hawkins, EdD, his dissertation chairperson, will have access to the data that identifies me personally. I have been informed that all data collected about me for the purpose of this study will be destroyed by Mark Holland within five (5) years of the date of signing this document.

I have been informed that if my participation makes me feel uncomfortable, Mark Holland, the principal investigator of this project, may be contacted and if necessary, a referral will be made for psychological help at my expense.

I am aware that although I may not directly benefit from this study, my participation in this project may benefit fire/EMS professionals and their future well-being.

I understand that I may contact Mark Holland at (919) 971-3064 or via email at chaplain@pvfd.com or his adviser, Ron Hawkins, Ed.D., at (434) 592-4030 or via email: rehawkin@liberty.edu or contact them by mail at Ron Hawkins, Ed.D., Vice Provost of Distance Learning and Graduate Studies, Liberty University, 1971 University Boulevard, Lynchburg, VA 24502, if I have any questions about this project or my participation in the study.

- ❑ I request a written summary of the group results of this study when it is complete. I may be contacted at the following address:

  _____

  _____

  _____ to receive a summary of the results.

- ❑ I am not interested in receiving a summary of the results of this study.

I understand that I will be signing two copies of this form. I will keep one copy and Mark Holland will keep the second copy for his records.

I have read this form and understand what it says. I am 18 years or older and voluntarily agree to participate in this project.

_____ _____

Participant's Signature Date

_____ _____

Principal Investigator's Signature Date

APPENDIX C

Background and Demographic Questionnaire (BDQ)

Background & Demographic Questionnaire

Instructions: Please respond to all items by selecting the appropriate boxes.

1. Age (in years)
   ☐ 18 to 29 (0) ☐ 30 to 39 (1) ☐ 40 to 49 (2) ☐ 50+ (3)

2. Gender
   0☐ Female 1☐ Male

   Ethnicity
0☐ African American 1☐ Asian 2☐ European/American Caucasian
3☐ Latino/Hispanic 4☐ Native American 5☐ Other (please specify)

   Marital Status
0☐ Single 1☐ Separated 2☐ Married
3☐ Divorced 4☐ Widowed 5☐ Other (please specify)

3. Current position (select one):
0☐ EMT/B 1☐ EMT/I 2☐ EMT/P 3☐ Firefighter
4☐ Firefighter/EMT 5☐ Firefighter/EMT-I 6☐ Firefighter/EMT-P

4. Total number of years in emergency services
   _____

The following questions are concerned with the extent to which fire/EMS work OVER THE LAST 4 WEEKS has affected your own health and other aspects of your life.

5. Please indicate to what extent your work has caused you OVER THE LAST 4 WEEKS to:

	0 Not at all	1 Slightly	2 Considerably	3 Extremely
a. feel tired or lacking in energy	☐	☐	☐	☐
b. feel anxious	☐	☐	☐	☐
c. feel depressed	☐	☐	☐	☐
d. have difficulty with sleeping	☐	☐	☐	☐
e. feel physically not well	☐	☐	☐	☐
f. feel irritable	☐	☐	☐	☐

6. Please indicate in what way your work has affected the following aspects of your life in the LAST 4 WEEKS?

	0 Not at all	1 Slightly	2 Considerably	3 Extremely
a. relationships with colleagues	☐	☐	☐	☐
b. general work performance	☐	☐	☐	☐
c. judgment at work	☐	☐	☐	☐
d. family relationships outside work	☐	☐	☐	☐
e. other personal relationships outside work	☐	☐	☐	☐

7. Please assign numerical values to the situations/cases/events described below using a scale of 1 to 5, "**1**" being **least stressful** to you and "**5**" being **most stressful** to you. If you have not experienced a certain personally disturbing incident described below in your role as an emergency services professional, please circle "0".

a. Death of a child
Stressful to you: 0 1 2 3 4 5
1 (low) to 5 (high)

b. Providing urgent care to patient who is a relative/close friend/colleague
Stressful to you: 0 1 2 3 4 5
1 (low) to 5 (high)

c. Natural disaster patients
Stressful to you: 0 1 2 3 4 5
1 (low) to 5 (high)

d. Accident calls/patients (i.e. vehicle, plan crashes, industrial or work related)
Stressful to you: 0 1 2 3 4 5
1 (low) to 5 (high)

e. Crime victims (i.e. victims of shootings, rape, child sexual abuse/assault)
Stressful to you: 0 1 2 3 4 5
1 (low) to 5 (high)

f. Burn victims
Stressful to you: 0 1 2 3 4 5
1 (low) to 5 (high)

g. Patients with massive traumatic injuries (i.e. massive bleeding & dismemberment)
Stressful to you: 0 1 2 3 4 5
1 (low) to 5 (high)

14. In general terms do you find your PEER colleagues sufficiently supportive of you after a personally disturbing incident?

☐	☐	☐	☐
Always	Frequently	Sometimes	Never
3	2	1	0

15. In general terms do you find your SENIOR colleagues sufficiently supportive of you after a personally disturbing incident?

☐	☐	☐	☐
Always	Frequently	Sometimes	Never
3	2	1	0

14. In general terms do you find your PEER colleagues sufficiently supportive of you after a personally disturbing incident?

☐	☐	☐	☐
Always	Frequently	Sometimes	Never
3	2	1	0

15. In general terms do you find your SENIOR colleagues sufficiently supportive of you after a personally disturbing incident?

☐	☐	☐	☐
Always	Frequently	Sometimes	Never
3	2	1	0

16. In general terms do you find your department sufficiently concerned about the emotional impact of personally disturbing incident on its personnel?

☐	☐	☐	☐
Always	Frequently	Sometimes	Never
3	2	1	0

17. In general terms do you believe concerns about confidentiality are a barrier to fire/EMS personnel seeking help/support after personally disturbing incidents?

☐	☐	☐	☐
Always	Frequently	Sometimes	Never
3	2	1	0

18. In general terms do you believe concerns about career prospects are a barrier to fire/EMS personnel seeking help/support after personally disturbing incidents?

☐	☐	☐	☐
Always	Frequently	Sometimes	Never
3	2	1	0

19. In general, do you find that you get SUFFICIENT time to recover from such personally disturbing incidents before you have to deal with another one?

☐	☐	☐	☐
Always	Frequently	Sometimes	Never
3	2	1	0

20. If you do not "Always" get enough time to recover do you feel that having MORE time to recover would enable you to deal better with the next incident?

☐	☐	☐	☐
Yes	No	Possibly	Don't know
2	0	1	0

21. At this stage in your career, please indicate which ONE of the following statements most accurately describes your own experience. Please read all the statements carefully BEFORE responding. Please select ONE response.

a. The more often I have had to deal with personally disturbing incidents the BETTER I have coped with them.	☐ 3
b. The more often I have had to deal with personally disturbing incidents the LESS WELL I have coped with them.	☐ 2
c. My dealing with previous personally disturbing incidents has had NO EFFECT on my ability to cope with them.	☐ 1
d. At first I found that having had to deal with personally disturbing incidents helped me cope BETTER with them but now I find it MORE DIFFICULT to deal with them.	☐ 0

In this section I would like you to think about a specific incident (within THE LAST 6 MONTHS) which you found to be the MOST personally disturbing. In relation to THAT incident which disturbed you most could you please complete the following items?

22. The type of incident (please specify)

23. The MOST disturbing features of the incident (please specify).

24. Approximately how long ago was the incident (IN WEEKS)?

25. For approximately how long did this incident disturb you? Please respond by selecting the appropriate box.

☐ A few hours 0	☐ About one day 1	☐ A few days 2	☐ About one week 3
☐ A few weeks 4	☐ About one month 5	☐ A few months 6	☐ Longer 7

26. As you reflect NOW upon the way you dealt with that incident AT THE SCENE how would you rate your own performance?

☐ Very Good 4	☐ Good 3	☐ Average 2	☐ Poor 1	☐ Very Poor 0

APPENDIX D

Impact of Event Scale-Revised (IES-R)

Impact of Event Scale-Revised

Instructions: Below is a list of difficulties people sometimes have after a stressful life events. Please read each item and then indicate how distressing each difficulty has been for you DURING THE PAST SEVEN DAYS with respect to the personally disturbing events you described in question 7.

How much were you distressed or bothered by these difficulties? Please circle your appropriate response to the statement.

Item Responses are:

0 = Not at all	1 = A little bit	2 = Moderately	3 = Quite a bit	4 = Extremely

I	1. Any reminder brought back feelings about it.	0	1	2	3	4
I	2. I had trouble staying asleep.	0	1	2	3	4
I	3. Other things kept making me think about it.	0	1	2	3	4
H	4. I felt irritable and angry.	0	1	2	3	4
A	5. I avoided letting myself get upset when I thought about it or was reminded of it.	0	1	2	3	4
I	6. I thought about it when I didn't mean to.	0	1	2	3	4
A	7. I felt as if it hadn't happened or wasn't real.	0	1	2	3	4
A	8. I stayed away from reminders of it.	0	1	2	3	4
I	9. Pictures about it popped into my mind.	0	1	2	3	4
H	10. I was jumpy and easily startled.	0	1	2	3	4
A	11. I tried not to think about it.	0	1	2	3	4
A	12. I was aware that I still had a lot of feelings about it, but I didn't deal with them.	0	1	2	3	4
A	13. My feelings about it were kind of numb.	0	1	2	3	4
I	14. I found myself acting or feeling like I was back at that time.	0	1	2	3	4
H	15. I had trouble falling asleep.	0	1	2	3	4
I	16. I had waves of strong feelings about it.	0	1	2	3	4
A	17. I tried to remove it from my memory.	0	1	2	3	4
H	18. I had trouble concentrating.	0	1	2	3	4
H	19. Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart.	0	1	2	3	4
I	20. I had dreams about it.	0	1	2	3	4
H	21. I felt watchful and on-guard.	0	1	2	3	4
A	22. I tried not to talk about it.	0	1	2	3	4

APPENDIX E

28-item General Health Questionnaire (GHQ-28)

The Scaled General Health Questionnaire

Instructions: I would like you to know if you have had any medical complaints and how your health has been in general, over the past few weeks. Please answer ALL the questions by circling the response which you think most nearly applies to you. Remember that I want to know about present and recent complaints, not those that you had in the past. It is important that you try to answer ALL the questions. Thank you for your cooperation.

Have you recently:

A1. Been feeling perfectly well and in good health?	Better than usual	Same as usual	Worse than usual	Much worse than usual
A2. Been feeling in need of some medicine to pick you up?	Not at all	No more than usual	Rather more than usual	Much more than usual
A3. Been feeling run down and out of sorts?	Not at all	No more than usual	Rather more than usual	Much more than usual
A4. Felt that you are ill?	Not at all	No more than usual	Rather more than usual	Much more than usual
A5. Been getting any pains in your head?	Not at all	No more than usual	Rather more than usual	Much more than usual
A6. Been getting a feeling of tightness or pressure in your head?	Not at all	No more than usual	Rather more than usual	Much more than usual
A7. Been having hot or cold spells?	Not at all	No more than usual	Rather more than usual	Much more than usual
B1. Lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual

B2. Had difficulty staying asleep?	Not at all	No more than usual	Rather more than usual	Much more than usual
B3. Felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
B4. Been getting edgy and bad-tempered?	Not at all	No more than usual	Rather more than usual	Much more than usual
B5. Been getting scared or panicky for no good reason?	Not at all	No more than usual	Rather more than usual	Much more than usual
B6. Found everything getting on top of you?	Not at all	No more than usual	Rather more than usual	Much more than usual
B7. Been feeling nervous and uptight all the time?	Not at all	No more than usual	Rather more than usual	Much more than usual
C1. Been managing to keep yourself busy and occupied?	More so than usual	Same as usual	Rather less than usual	Much less than usual
C2. Been taking longer over the things you do?	Quicker than usual	Same as usual	Longer than usual	Much longer than usual
C3. Felt on the whole you were doing things well?	Better than usual	About the same	Less well than usual	Much less well than usual
C4. Been satisfied with the way you've carried out your task?	More satisfied	About the same as usual	Less satisfied than usual	Much less satisfied
C5. Felt that you are playing a useful part in things?	More so than usual	Same as usual	Rather less than usual	Much less than usual

C6. Felt capable of making decisions about things?	More so than usual	Same as usual	Rather less than usual	Much less than usual
C7. Been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Rather less than usual	Much less than usual
D1. Been thinking about yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
D2. Felt that life is entirely hopeless?	Not at all	No more than usual	Rather more than usual	Much more than usual
D3. Felt that life isn't worth living?	Not at all	No more than usual	Rather more than usual	Much more than usual
D4. Thought of the possibility that you might do away with yourself?	Definitely not	I don't think so	Has crossed my mind	Definitely have
D5. Found at times you couldn't do anything because your nerves were too bad?	Not at all	No more than usual	Rather more than usual	Much more than usual
D6. Found yourself wishing you were dead and away from it all?	Not at all	No more than usual	Rather more than usual	Much more than usual
D7. Found that the idea of taking your own life kept coming into your mind?	Definitely not	I don't think so	Has crossed my mind	Definitely has

APPENDIX F

Ways of Coping Questionnaire (WOC)

Coping Methods Section

Instructions: To respond to the statements in this section, you must have a specific stressful situation in mind. Take a few moments and think about the most stressful situation that you have experienced in the past week.

By "stressful" we mean a situation that was difficult or troubling to you, either because you felt distressed about what happened, or because you had to use considerable effort to deal with the situation. The situation may have involved your family, your job, your friends, or something else important to you. Before responding to the statements, think about the details of this stressful situation, such as where it happened, who was involved, how you acted, and why it was important to you. While you may still be involved in the situation, or it could have already happened, it should be the most stressful situation you experienced during the week.

As you respond to each of the statements, please keep this stressful situation in mind. Read each statement carefully and indicate by circling 0, 1, 2, or 3, to what extent you used it in the situation.

Item Responses are:

0 = Does not apply or not used 1 = Used Somewhat 2 = Used quite a bit 3 = Used a great deal

PS	1. I just concentrated on what I had to do next - the next step.	0	1	2	3
0	2. I tried to analyze the problem in order to understand it better.	0	1	2	3
0	3. I turned to work or another activity to take my mind off things.	0	1	2	3
0	4. I felt that time would have made a difference - the only thing was to wait.	0	1	2	3
0	5. I bargained or compromised to get something positive from the situation.	0	1	2	3
CC	6. I did something that I didn't think would work, but at least I was doing something.	0	1	2	3
CC	7. I tried to get the person responsible to change his or her mind.	0	1	2	3
SS	8. I talked to someone to find out more about the situation.	0	1	2	3
AR	9. I criticized or lectured myself.	0	1	2	3
SC	10. I tried not to burn my bridges, but leave things open somewhat.	0	1	2	3
E	11. I hope for a miracle.	0	1	2	3
D	12. I went along with fate; sometimes I just have bad luck.	0	1	2	3
D	13. I went on as if nothing had happened.	0	1	2	3
SC	14. I tried to keep my feelings to myself.	0	1	2	3
D	15. I looked for the silver lining so to speak; I tried to look on the bright side of things.	0	1	2	3
E	16. I slept more than usual.	0	1	2	3
CC	17. I expressed my anger to the person(s) who caused the problem.	0	1	2	3
SS	18. I accepted sympathy and understanding from someone.	0	1	2	3
0	19. I told myself things that help me feel better.	0	1	2	3
PR	20. I was inspired to do something creative about the problem	0	1	2	3
D	21. I tried to forget the whole thing.	0	1	2	3
SS	22. I got professional help.	0	1	2	3
PR	23. I changed or grew as a person.	0	1	2	3

0	24. I waited to see what would happen before doing anything.	0	1	2	3
AR	25. I apologized or did something to make up.	0	1	2	3
PS	26. I made a plan of action and followed it.	0	1	2	3
0	27. I accepted the next best thing to what I wanted.	0	1	2	3
CC	28. I let my feelings out somehow.	0	1	2	3
AR	29. I realized that I had brought the problem on myself.	0	1	2	3
PR	30. I came out of the experience better than when I went in.	0	1	2	3
SS	31. I talked to someone who could do something concrete about the problem.	0	1	2	3
0	32. I tried to get away from it for a while by resting or taking a vacation.	0	1	2	3
E	33. I tried to make myself feel better by eating, drinking, smoking, using drugs, or medications, etc.	0	1	2	3
CC	34. I took a big chance or did something very risky to solve the problem.	0	1	2	3
SC	35. I tried not to act too hastily or follow my first hunch.	0	1	2	3
PR	36. I found new faith.	0	1	2	3
0	37. I maintained my pride and kept a stiff upper lip.	0	1	2	3
PR	38. I rediscovered what is important in life.	0	1	2	3
PS	39. I changed something so things would turn out right.	0	1	2	3
E	40. I generally avoiding being with people.	0	1	2	3
D	41. I didn't let it get to me; I refused to think too much about it.	0	1	2	3
SS	42. I asked advice from a relative or friend I respected.	0	1	2	3
SC	43. I kept others from knowing how bad things were.	0	1	2	3
D	44. I made light of the situation; I refused to get too serious about it.	0	1	2	3
SS	45. I talked to someone about how I was feeling.	0	1	2	3
CC	46. I stood my ground and fought for what I wanted.	0	1	2	3
E	47. I took it out on other people.	0	1	2	3
PS	48. I drew on my past experiences; I was in a similar situation before.	0	1	2	3
PS	49. I knew what had to be done; so I doubled my efforts to make things work.	0	1	2	3
E	50. I refused to believe that it had happened.	0	1	2	3
AR	51. I promised myself that things would be different next time.	0	1	2	3
PS	52. I came up with a couple of different solutions to the problem.	0	1	2	3
0	53. I accepted the situation, since nothing could be done.	0	1	2	3
SC	54. I tried to keep my feeling about the problem from interfering with other things	0	1	2	3
0	55. I wished that I could change what had happened or how I felt.	0	1	2	3
PR	56. I changed something about myself.	0	1	2	3
0	57. I daydreamed or imagined a better time or place than the one I was in.	0	1	2	3
E	58. I wished that the situation would go away or somehow be over with.	0	1	2	3
E	59. I had fantasies or wished about how things might turn out.	0	1	2	3
PR	60. I prayed.	0	1	2	3
0	61. I prepared myself for the worst.	0	1	2	3
SC	62. I went over in my mind what I would say or do.	0	1	2	3
SC	63. I thought about how a person I admire would handle this situation and used that as a model.	0	1	2	3
0	64. I tried to see things from the other person's point of view.	0	1	2	3
0	65. I reminded myself how much worse things could be.	0	1	2	3
0	66. I jogged or exercised.	0	1	2	3