THE CHANGE IN FIRST RESPONDER'S TRAUMA SYMPTOMS AFTER PARTICIPATION IN A RESIDENTIAL RECOVERY PROGRAM

A dissertation submitted to the Wright Institute Graduate School of Psychology,
in partial fulfillment of the requirements for the Degree of Doctor of Psychology

by
SALLY ANN CANTRELL
July 2010

CERTIFICATION OF APPROVAL

I certify that I have read THE CHANGE IN FIRST RESPONDER'S TRAUMA SYMPTOMS AFTER PARTICIPATION IN A RESIDENTIAL RECOVERY PROGRAM by Sally Cantrell, and that in my opinion this work meets the criteria for approval of a dissertation submitted in partial fulfillment of requirements for the degree of Doctor of Psychology at the Wright Institute Graduate School of Psychology.

_____ _____

Andrew Pojman, Ed.D. Date
Dissertation Chair

_____ _____

Alicia del Prado, Ph.D. Date
Second Reader

July, 2010

THE CHANGE IN FIRST RESPONDER'S TRAUMA SYMPTOMS AFTER PARTICIPATION IN A RESIDENTIAL RECOVERY PROGRAM

by
SALLY ANN CANTRELL

The West Coast Post-trauma Retreat (WCPR) is a residential treatment program for First Responders (police officers, fire fighters and emergency personnel) suffering after exposure to a critical incident. Critical incidents are operationally defined as stressful or traumatic events experienced by those who work in emergency service occupations. Over four years, 172 clients participated in the WCPR treatment program. Seventy-six percent (*n*=131) of these First Responders were clinically diagnosed with Posttraumatic Stress Disorder (PTSD), while 14% (*n*=24) were diagnosed with Acute Stress Disorder, depression, Complicated Bereavement or other anxiety disorders. A clinical diagnosis was missing for the remaining First Responders (*n*=18). A team of clinicians and peer staff provided treatment to groups of 6-7 participants on a monthly basis. This dissertation provides a detailed descriptive analysis of the client population, evaluates the treatment program based on client symptom change as self-reported on the Trauma Symptom Inventory (Briere, Elliot, Harris, & Cotman, 1995), and explores the role of time since the critical incident, number of incidents, and type

of incident on initial symptomatic presentation. Four hypotheses are tested: 1) Trauma symptoms are significantly reduced as a result of participation in WCPR, 2) Symptom expression depends on how recently the trauma took place, 3) First Responders symptomatic response to increasing numbers of traumatic incidents is different than lay people's responses, and 4) First Responders with severe trauma have significantly more symptoms than officers reporting less severe trauma exposures. This is a longitudinal study utilizing a pretest/posttest comparison group model design. The results indicate that participation in WCPR's treatment program is associated with significant trauma symptom reduction. There was a significant decrease on each of the TSI scales from pretest to posttest. There was no association between how recently the trauma took place and pretest symptom expression. The number of traumatic incidents a responder reported was positively correlated with the level of reported trauma on each of the TSI summary scales. Experiencing a primary exposure to a critical incident was not associated with a higher level of pretest symptom expression than experiencing a secondary exposure.

For my pack – Christopher, Zachary, and of course Floyd and Crosby

Acknowledgments

Many people contributed to this dissertation in a variety of ways. I would first like to acknowledge the First Responders, who over the years participated in WCPR and showed tremendous courage standing up to the critical incident that left them reeling. My admiration for them is enormous, and I am thankful for their commitment to keeping the rest of us safe. Additionally, in the process of doing the research and writing for this dissertation, I came into contact with many dedicated volunteers who make WCPR the quality program that it is today. The vast majority of these volunteers shared some aspect of their own experience with trauma. Many of them came through WCPR themselves and were able to describe in marked detail the pain they had when they arrived at the program and the transformative experience that led them to re-engage in life. I am grateful for all these firsthand accounts and the openness to letting an outsider learn about the world of First Responders.

While doing this dissertation I gained an appreciation for the sometimes warped, yet supremely enjoyable sense of humor that comes along with this line of work. As an aspiring mental health practitioner, I hope this experience will allow me to be a psychologist that First Responders will be able trust, confide in, and laugh with when they are in need.

There are a few people in particular I would like to name for the support they provided: Joel Fay for initially inviting me out to see WCPR, and then

inviting me back. He made time for me to interview him, which gave me the broad perspective that allowed the work to tie together. Mark Kamena was instrumental in a number of ways - by initially conceiving of the idea to collect data related to the program's effectiveness and then carrying this process out. He was also unfailing in his support of this project by providing background and resources, reading drafts, and making insightful comments. He also possesses a dry wit that makes him fun to be around. I'd like to thank Sue Faria and MaryAnn Stark, who were both roommates of mine while participating in retreats, and who welcomed me in and helped inform my understanding of how the program works. Ann Bisek assisted me in launching this project, read early drafts, and always had encouraging words along the way. Gary Larsen also took me under his wing and gave generously of his time and wide ranging knowledge. Mike Pool made sure that there was never a dull moment and was always willing to play the bad cop when confronting a client in the service of healing. There were many other encounters with WCPR staff that made the whole experience unforgettable; among them were conversations with Jan Hegland, Jan Meyers, Janice Hoaglin, Jack Canziani, Stephanie Cress, Ron Basque, Louise Pagone, Russ Davidson, Jody Greenhalgh, Ellen Kirschman, Kay Williams, and Marilyn Wooley. I'd like to take this opportunity to honor the memories of Joe Banuelos and Al Benner as well.

Finally, my dissertation Chair, Andy Pojman, first got me thinking about First Responders when he described his own work with Firefighters during his class. He is a teacher who has high expectations, is passionate about his work, and possesses one of those easy going demeanors that makes you want to work with him. Each of these qualities has helped me along the way. Alicia del Prado, my second reader, improved the quality of this dissertation substantially through her thoughtful feedback. Initially, she helped me narrow the scope of this dissertation to a reasonable set of questions and then she was always willing to ponder the statistical aspects of this work. In my experience of her, she embodied traits of a life-long learner – someone who doesn't claim to know all the answers, but is curious to discover them. I would be remiss not to acknowledge the key role that Bruce Cooper, my statistician played, in helping me analyze and then understand the meaning of what I found.

It would have been completely impossible for me to change career paths as dramatically as I did had it not been for the unfailing support of my husband, Chris. I am eternally grateful for his commitment to helping me find my true calling.

Table of Contents

Chapter 1: Introduction

First Responders are public safety professionals such as firefighters, police officers and paramedics who respond to emergency situations. The work of First Responders is hazardous. As First Responders to a scene, they are expected to preserve community lives and property through the consistent exercise of rapid and competent judgment. Emergency workers frequently cite certain incidents as particularly traumatic, such as those which involve children, multiple deaths, or a threat to one's own life (Dyregrov & Mitchell, 1992; McCammon, Durham, Allison, & Williamson, 1988; Moran & Colless, 1995). The lives of firefighters, rescuers, and police are frequently depicted on popular televisions shows (e.g., *The Wire*, *Emergency*, *FireHouse TV*, *Cops*, *Rescue Me*, and *The Shield*) and in movies (e.g., *Backdraft*, *Firestorm*, *Ladder 49*, and *S.W.A.T.*). Though often depicted as heroic, the aftermath for an individual responder may be far different. Stress associated with these jobs has been found to affect work performance, endangering the first-responder, civilians, and others responding to a crisis (Duffy, 1979; Glass, 1959; Mitchell, 1986a, 1986b). Routine calls may eventually take their toll on the professional or a single overwhelming incident may be responsible for impacting a responder's mental and physical health. Alcohol and drug use, depression, and anxiety are common comorbid conditions associated with trauma (Brady, Killeen, Brewerton, & Lucerini, 2000). Those who meet the

criteria for a diagnosis with Posttraumatic Stress Disorder (PTSD) exhibit symptoms of arousal, intrusion, and avoidance. The Chief of the Cincinnati Police Department described the stressful occupation as follows (Benson, 1975):

> I have been a policeman for almost twenty years. During that time, I have seen many of my fellow police officers incapacitated by health problems, heart attacks, ulcers, chronic headaches, mental depression, and even suicide. They have been stricken in numbers that seem unduly large when compared to friends in the business world and in government service agencies other than police.
>
> The situation is a paradoxical one because police officers begin their careers as healthy men and women. They enter the profession as the healthiest and most physically fit people in any single occupation…(pp. 275)

Because of the growing recognition of the enormous impact that traumatic incidents can have on emergency responders' lives and families, there is a gradually increasing number of services to meet the needs of these individuals. There are currently two U.S. residential treatment facilities (On-Site Academy and First Responder Support Network) that provide intensive mental health services to emergency responders who are suffering after experiencing a traumatic incident or incidents. On-Site Academy is located in Westminster, Massachusetts and the First Responder Support Network is located in the San Francisco Bay

Area. The West Coast Post Trauma Retreat (WCPR) program is the residential treatment component of the First Responder Support Network and is the focus of this dissertation. This agency has collected trauma symptom data on all clients before and after participating in their treatment program. Although the program has functioned successfully for many years, no formal program evaluation has been performed. The main goal of this dissertation is to evaluate the efficacy of WCPR's treatment program.

Overview of the Program

WCPR is a 6 day residential treatment program designed specifically by "Cop Docs" (i.e., psychologists who are also police officers) to meet the needs of First Responders who are suffering after exposure to a critical incident or cumulative stress acquired from their day-to-day work experience. Critical incidents refer to stressful or traumatic events experienced by those who work in emergency service occupations. According to Bard and Ellison (1974), a crisis involves a subjective reaction to an event such that the ability of the individual to cope effectively is jeopardized. It is not necessarily the situation that makes the event stressful, but rather, the individual's perception of the event (Bard & Ellison, 1974). The perspective that trauma is a subjective experience is referred to as the transactional model of stress (Lazarus & Folkman, 1984). Others have used the term schemata to explain individual's tendencies to perceive and process information from the environment in specific ways (Paton, 1994; Wachtel, 1980).

While all responders are exposed to stressful situations, some experience stress reactions and improve without intervention while others do not. WCPR, a psychologically informed program, was developed for the First Responders who do not get better on their own.

The mission of the organization is to focus on clients' resiliency, improve their quality of life, and reduce symptoms associated with traumatic stress (Kamena & Fay, 2007). WCPR utilizes an integrative treatment approach based on a psychosocial model, with the goal of restoring a person to a healthy equilibrium commensurate with their pre-incident level of functioning. This is done by challenging faulty cognitive beliefs through education, peer support, and clinical work. Questions posed to clients throughout the program are a key component of the treatment approach. Beginning the very first night of the program clients are asked to start to recount their trauma verbally by responding to a structured set of questions. These responses are often constricted. Indeed, the process of exposure to their incident starts long before the debriefing starts when clients have their initial phone intake session. Sometimes their description is only a few sentences long or they describe a situation that is actually less triggering and easier to tolerate. By the end of the week they will have shared their story many times, allowing for gradual desensitization to the emotional and physiological responses elicited by recalling their trauma. Thus, prolonged imaginal exposure is a major component of the treatment program. The

expectation is that by the end of the week the client will be able to tolerate their experience, reflect on it, and explore the nuances of how it came to impact them so deeply. This takes gradual repeated exposure over the course of the week.

To accomplish this healing process, participants undergo an in-depth intake process, individual and group therapy, peer counseling and support, critical incident debriefing protocols (Mitchell & Everly, 1997), Eye Movement Desensitization and Reprocessing (EMDR; Shapiro, 2007), and family of origin work. The psychoeducational portions of the program include classes on topics such as alcohol and substance abuse, the physiological effects of stress during and after a critical incident, and goal planning and setting. After receiving education regarding goal planning and setting, clients create a 90-day action plan focused on concrete steps they will take upon returning home in order to maintain recovery. Examples of items in an action plan may include: making an appointment with a therapist, exercising at the gym three times a week, or making a plan to take their partner to a movie.

The facility for the program is located in a rural area of western Marin County, about 45 minutes from San Francisco. Retreats have 6-7 participants and are staffed by two clinical psychologists, one chaplain, and six or seven peers, most of whom have previously participated in the program. Additional clinicians and peers join in the weekly activities as they are needed. The staff-to-client ratio is high in order to increase the likelihood that each client is able to identify one

peer they can connect with during the program. The peers are believed to be a key component of the program's success. Their personal experience with comparable traumatic situations allows them to normalize the participants' behavior and symptoms while providing hope for recovery (Jerrard, 2008). Peers are trained to disclose personal information judiciously so that the focus of treatment remains on the client and the client is neither overwhelmed by exposure to additional traumas nor feels that their experience was less worthy of treatment.

History of the West Coast Posttrauma Retreat (WCPR)

The following history was reported by J. Fay (personal communication, June 30th, 2009). WCPR was started in 1999 by a small group of individuals in response to a friend and officer in need of help. The officer, Mike Pool, had responded to a school incident where a child tried to shoot at his face, but when the gun did not fire he was able to disarm the student. As a result of this incident, Pool began experiencing intense anger; however, he was unwilling to seek help. His deterioration led friends and family to intervene. Unbeknownst to him, Pool was enrolled in On-Site Academy, a program in Massachusetts dedicated to working with Emergency Responders suffering as a result of exposure to trauma. Pool's wife, Jan Meyers, a police dispatcher, had previously attended this program and found it helpful in dealing with her own work related stress response. She told Pool that she was taking him to dinner in San Francisco, but instead drove him to the airport and put him on a plane to On-Site Academy.

After Pool's return, he felt much better and discussed with a group of friends the need for such a program on the West Coast. They joined together to begin the planning process, which took 18 months. Those involved included two people from the North Bay Regional Critical Incident Stress Management Team, Al Benner, a San Francisco police officer and psychologist, Mark Kamena, a former Berkeley police officer and psychologist, Joel Fay, a Marin County police officer and newly licensed psychologist, and Jim Hyde, the Chief of Antioch Police Department who was also working on a degree in Organizational Psychology.

On-Site Academy staff was invited to California to conduct the first WCPR retreat. Seven clients attended for free, and funds were raised to pay for the On-Site Academy staff's travel costs and consulting fee. The first retreat was deemed a success by participants. A second session was held with one person from On-Site Academy assisting. During the initial two years of WCPR, three retreats were held per year. There were four retreats the third year, six retreats the fourth year, and now there are 10-12 retreats per year. Over time, the retreats gradually became more effective as the clinicians learned more about trauma from the literature and garnered additional experience working with traumatized First Responders. For example, documentation was not kept during the first session but soon was added, as was psychological testing. Support for the staff's emotional response to clients was minimal during the early retreats but gradually evolved to

meet their needs. Likewise, a curriculum which borrowed heavily from On Site Academy's program was tailored by the clinicians. The new program included peers, and modules were added until it became a distinct program from the one on which it was originally based.

During the initial period a few changes in leadership took place and Joel Fay was installed as the WCPR President and Mike Pool was named Peer Coordinator, the same person who was originally sent to On-Site Academy. Pool defined the position, recognizing the need to recruit more peers into the program and to maintain communication with clients during the interim period before they attended, when many clients are suicidal. More clinicians were added during this time as well.

Gradually, the program adopted new components, evolving over time into what it is today. For instance, Joel Fay developed the novel concept of an *Emergency Responder Exhaustion Syndrome* over the course of several years working with these clients. This concept was shared publically when Fay Kamena, Benner, Buscho, and Nagle (2006) published an article entitled *Emergency Responder Exhaustion Syndrome (ERES): A perspective on stress, coping and treatment in the emergency responder milieu* in *Law Enforcement Executive Forum Journal* describing how WCPR uses this idea to help program participants conceptualize their trauma related symptoms. Eye Movement Desensitization Reprocessing (EMDR; Shapiro, 2007) was introduced as an

intervention for all clients. Peers were brought in to provide additional support to clients before, during, and after attending the retreat. The peers also leant authenticity to the program, providing examples of people who had weathered critical incidents and experienced trauma symptoms, yet were now living fulfilling lives. Other aspects of the program were refined as well. For instance, early on clinicians would leave for an afternoon to attend a meeting related to their regular full-time job. However, it became apparent that clients were disrupted by this lack of continuity, and so a model that included two lead clinicians who were always present developed.

The most important source of referrals for the program continues to be word of mouth. There is now a charge to attend a week long session ($2,750); however, more and more insurance companies are approving care under the extended debriefing model, including Kaiser, United Behavioral Health, Tri-West, and a number of state's worker's compensation systems. If funding is an issue, training grants or scholarships are often available to allow attendance.

The major hurdles the organization now faces are related to space and staff burn-out. Because of increasing demand for services, the current space used for retreats is no longer sufficient, and there is also a need for more peer counselors, clinicians and chaplains. The previously all-volunteer run model now includes three paid staff positions: Administrative Coordinator, Clinical Director, and Peer Director.

Rationale for the study

WCPR has received praise from clients and leaders in the field of trauma recovery, and yet no quantitative analysis has been done to support claims regarding treatment efficacy. For example, one former WCPR client said, "If those people hadn't been there for me, I honestly don't know what would have happened. I don't think I would be here to talk about it" (Horowitz, 2003). Another shared, "There were no touchy-feely group hugs, etc. Just well organized instructions and discussions that helped make sense of the way I'd reacted to some chaotic events" (West Coast Post-trauma Retreat, 2009). Ellen Kirschman, Ph.D., a veteran police clinical psychologist of twenty years and the author of *I Love a Cop: What Police Families Need to Know* (2007) and *I Love a Fire Fighter: What the Family Needs to Know* (2004) also endorses the program. Despite generous anecdotal support, no objective measure of the program has occurred to date due to lack of resources and research expertise.

Research evaluating WCPR's treatment program is the logical next step for an organization stretched to capacity by the current demand of clients. This year, WCPR underwent a planning process that resulted in a 3-year strategic plan. It was determined that increased funding would need to be secured in order for WCPR to respond to the demonstrated need of traumatized First Responders. Research indicating the merit of the program is essential to revenue development. A program evaluation will also assist in refinement of the treatment approach,

thus improving the ability of the program to reduce the impact of trauma on the public safety community.

Hypotheses

It is hypothesized that First Responders trauma symptoms will be significantly reduced after participating in WCPR. The secondary focus of this dissertation is to contribute to the understanding of how First Responders experience trauma, specifically the impact of the passage of time, the number of traumas, and the type of trauma. There are four hypotheses:

H_1) trauma symptoms in First Responders are significantly reduced as a result of participation in WCPR,

H_2) First Responders who completed WCPR and experienced a recent trauma will report greater Intrusiveness levels and lower Anger and Avoidance levels on the Trauma Symptom Inventory (Briere, Elliot, Harris, & Cotman, 1995) than those who experienced a distant trauma,

H_3) First Responders will have a different symptomatic response to increasing numbers of traumatic incidents than lay people, and

H_4) First Responders with a primary trauma exposure will have significantly more symptoms than officers reporting a secondary trauma exposure.

Archival clinical data generated for the purpose of treating clients will be used.

Chapter 2: Literature review

Trauma therapy focuses on reducing or eliminating intrusive, avoidant and arousal symptoms. Medications may be used in conjunction with psychological treatment. One dilemma in treating trauma is that reminders of trauma activate PTSD, and treating trauma evokes traumatic reminders. Therefore, processing a trauma in therapy must be balanced with containment strategies so the client does not become flooded with overwhelming feelings. The most widely researched empirically validated treatment for trauma is a cognitive behavioral approach, exposure therapy. It might be argued that the tenant of exposure is a component of all trauma therapeutic approaches. EMDR is another well regarded therapeutic intervention for trauma, though it may simply be a subset of exposure therapy which includes a built in distraction serving as a containment strategy. Narrative exposure therapy also includes exposure as a main tenant, though it was designed to work with clients who experienced multiple traumas, instead of focusing on an acute incident. Psychoeducation is generally included as part of trauma treatments. WCPR uses an integrated approach to treating trauma, relying heavily on exposure techniques, incorporating psychoeducation, and collaborating with psychiatrists who provide client's with medication, when appropriate. In addition, WCPR uses standardized trauma assessment measures to understand client symptom presentation before and after going through the treatment program.

Introduction to the Treatment Approach

WCPR operates on the assumption that each client had a healthy pre-morbid level of functioning. This is based on the fact that all police officers and many firefighters undergo and pass pre-employment psychological evaluations. The goal of treatment is to help the responder connect maladaptive beliefs and coping mechanisms to current symptoms. For instance, when First Responders enter the program they often have come to the conclusion that they are "going crazy". However, a common response to trauma is panic, which is often interpreted by the responder as "going crazy" (Fay, 2009). In this instance, psychoeducation about what panic is and how it can be treated is very helpful. The treatment approach developed by WCPR specifically for the First Responder subculture is composed of the elements listed below. They will subsequently be described in greater detail.

1. Challenging the *Myth of Uniqueness*
2. Emergency Responder Exhaustion Syndrome (ERES)
3. Modified debriefing process
4. Education on psychophysiology of stress, responder personalities and other relevant topics
5. Substance abuse treatment/education
6. Addressing early traumatic or unresolved issues
7. Goal setting

8. Family, work, retirement reintegration
9. Administrative & personal betrayal
10. Eye Movement Desensitization and Reprocessing (EMDR)
11. Assessment

Challenging the Myth of Uniqueness

The myth of uniqueness refers to the commonly held belief among First Responders that they are the only one experiencing negative symptoms as a result of their exposure to a critical incident (Fay, Kamena, Benner, Buscho, & Nagle, 2006). Frequently, the responder is surprised by their own reactions because they have experienced many other traumatic situations over the course of their career. Moreover, the First Responder work culture does not encourage discussion of emotional responses to difficult events (Progrebin & Poole, 1991). As a result, the responders tend to make internal attributions that something is wrong with them. This belief can be revised through cognitive restructuring (Smyth, 1999). On the first night of the retreat, WCPR residents interview each other in a semi-structured format and then share what they discovered with the entire group. Some of the questions they ask each other are:

1. Why are you here and why now?
2. What will be the first sign that will tell you that you are getting better?
3. What will be the first thing other people notice?
4. Who will be the first person to notice a change and why?

5. Can you tell me about a time in your life when you were able to overcome a difficult situation?
6. What skills, traits, and abilities did you use to overcome this situation?

Residents learn from this activity that other responders are experiencing distress very similar to their own. This is the first step in challenging the isolation felt by the resident. The peer staff play a key role in this activity by asking the participants about their experience and normalizing symptoms a responder may have, particularly when a responder is reluctant to own up to distressing symptoms associated with their critical incident. Because of the nature and timing of this exercise, it facilitates group cohesion and builds a sense of safety that is essential for the success of the program.

Emergency Responder Exhaustion Syndrome (ERES)

Not only do First Responders tend to be skeptical about working with therapists, they also tend to reject the notion of a formal diagnosis (Levenson & Dwyer, 2003). Therefore, clinicians at WCPR developed the concept of Emergency Responder Exhaustion Syndrome (ERES) as a way of talking about trauma. ERES incorporates many of the symptoms that are used to formally diagnose anxiety disorders. They have found that ERES is accepted by most responders. The core elements of ERES are depression, isolation, and physical and emotional exhaustion. Depression of varying degrees is a common response to trauma (Fay, et al., 2006). It is often accompanied by suicidal thoughts or

suicide attempts. Moreover, other symptoms of trauma may disrupt functioning, leading to a sense of shame that contributes to depression. Isolation refers to the experience that a responder is the only one having troubling responses to a critical incident. Other forms of isolation include responders having gradually increasing difficulty relating to people outside their profession and therefore spending less time with friends and family, and participating in activities they previously enjoyed. One example of how isolation could manifest itself follows. A male officer who is honored with awards for shooting a suspect who was about to kill his partner may have conflicting feelings about taking this action. Privately, he may suffer over what it means to take a life since this may contradict personal values and beliefs, yet he is lauded for his action and treated as a hero. Exhaustion refers to a depletion of the ability to cope. As a responder exhausts his or her coping abilities, symptoms such as insomnia, suspiciousness, hyper-vigilance, chronic fear, panic attacks, disengagement, emotional constriction, depersonalization, derealization, memory disturbance, exaggerated startle response and agoraphobia may appear (Briere, Weathers, & Runtz, 2005).

Within this framework, residents can begin to make sense of the symptoms they are experiencing without feeling pathologized. Educating responders about ERES helps them understand how their career contributes to their current distress. WCPR implements the ERES component of the program by assisting residents in externalizing their depression, isolation, and physical and

emotional exhaustion. Viewing these elements as the problem, rather than the problem being an inherent part of themselves, allows the resident to see their symptoms as manageable.

During the ERES education portion of the program, each responder is asked in group to answer the following questions to begin the externalization process:

1. What does "the problem" (depression, isolation, exhaustion) get you to do or not do that is a concern to you or your loved ones?
2. How much of your life is controlled by "the problem"?
3. If you awoke tomorrow and by some miracle "the problem" was gone, how would your life be different?

These questions were composed with the narrative concept of externalization of the problem and reflect how a narrative therapeutic approach is interwoven throughout WCPR's treatment program. Narrative therapy (Morgan, 2000), a therapeutic modality born out of the family therapy traditions and now applied in a variety of other contexts (individuals, couples, families, groups, mandated therapeutic contexts and communities), maintains a collaborative approach to treatment in which the client is believed to be the expert on their own life. It views problems as separate from people and assumes people have many skills and abilities that will assist them in reducing the influence of the problem in their life. In brief, narrative therapists are interested in joining with people to

explore the stories they have about their lives and relationships with the intent of finding richer meanings that allows the individual to break away from the influence of the problem they are facing (Morgan, 2000).

Modified Debriefing Process

Psychological debriefing was originally conceived as an early crisis intervention aimed at helping First Responders reduce their immediate distress and learn about potential trauma responses, with the ultimate goal of maintaining occupational effectiveness (Rudofossi, 2007). The debriefing process also follows in the narrative tradition. Narrative exposure therapy involves repeated, detailed discussion of the worst traumatic event while re-experiencing the affect associated it. Because of the nature of their work, it is often difficult for First Responders to identify a single worst event. In these instances the responder is asked to debrief on the one that is currently bothering them the most. WCPR uses a modified version of the International Critical Incident Stress Foundation's seven step debriefing model: Introduction; Fact Phase; Thought Phase; Reaction Phase; Symptom Phase; Teaching Phase; and Re-entry Phase (Mitchell & Everly, 1997). The debriefing process is broken up over a period of days. Responders from a variety of professions who have experienced unique critical incidents spend one day describing the facts of their incident, a second day describing thoughts associated with the experience, and a final day sharing their reactions (e.g., the impact the incident had on their life) to the incident.

Before beginning the debriefing process responders receive the following information regarding assumptions that are being made: 1) The responder had an adequate pre-morbid level of functioning, 2) Symptoms are normal and not signs of a serious disturbance, and 3) Symptoms are temporary (Bohl, 1995).

During the debriefing phase of the treatment program the clinical psychologists assist clients in sharing their personal trauma story with the group and eliciting greater personal understanding of their trauma reaction by asking questions. Other group participants gain insight into their own trauma experience by observing the process fellow participants go through in responding to these queries. Some questions used to assist the residents in the debriefing phase include the following:

1. At that moment (during the incident) what were you thinking (feeling, sensing)?
2. How did the incident (or specific moment) affect the way you conduct your life?
3. Complete this sentence: "Because of the incident I now fear that/hope that…"
4. What belief did you develop about yourself as a result of your involvement in this incident? Is this a positive belief?
5. If the belief remains, how might it affect your life?

6. Is there anything about this incident that reminds you of something that occurred in the past?

Like all aspects of the program, peers are integral to the debriefing component. Peer staff and therapists are knowledgeable about First Responders' work and lifestyles, either through first hand experience or through close contact. Through the use of common terms and similarity of background, a connection can be built. They are also able to confront participants who appear to be in denial about repercussions associated with their critical incident. For example, if a participant asserts that they do not feel bad about shooting a suspect, peers may share that in their own experience they felt terrible after having shot a criminal, thus creating space for the responder to express a wider range of emotional responses.

Psychoeducation Modules for First Responders with Trauma Symptoms

Education on psychophysiology of stress, common personality traits of responders, the use of medication, sleep hygiene, family issues, and relapse prevention are provided throughout the treatment program. Psychoeducation helps the responder put their experience in a context that is understandable. It also serves to destigmatize psychological disturbances and thereby diminish barriers to treatment. These presentations are prepared by WCPR clinicians who have read extensively in each of these topic areas and incorporated information from peer reviewed literature on trauma. The presentations attempt to make this body of

literature accessible to lay people, many of which have limited educational experience, and who may be experiencing difficulties in the areas described. These presentations are not copyrighted.

During a presentation called *The Psychophysiology of Stress*, participants learn how the brain processes traumatic events, the importance of a fear response to survival, the difference between traumatic and non-traumatic memories, as well as common psychological responses that occur during and after a trauma. This psychoeducation piece helps responders make sense of the symptoms they are experiencing within a biological context that is non-blaming. A psychiatrist presents *The Use of Medication for Treating Trauma*, providing information about psychotropic medications, medication side effects, the influence of trauma on the brain, and the role of alcohol after a traumatic incident. Like many communities, there is stigma attached with the use of medication for mental health purposes in the First Responder community. This stigma prevents responders from learning about how medication may help them reduce their trauma symptoms. Therefore, this psychoeducational segment helps build awareness of how medication can help a responder heal and provide a healthier alternative to other mind altering drugs.

A clinician led discussion on *Responder Personalities* reveals how a mix of traits associated with the profession help accomplish a tough job. According to Mitchell and Bray (1990), emergency service personnel are characteristically

"can-do", adventurous people who seek out risks, excitement, and challenge. They further state that emergency service personnel like being in control of situations, harbor high performance expectations of themselves, and take great personal and professional pride in their duties. Other research indicates that First Responders believe in their own emotional and physical indestructibility (Mitchell, 1986b; Spitzer, 1988). In fact, emergency workers tend to rate their chances of being impaired following stressors as lower than average (Moran & Colless, 1995). This trait of hopefulness may enhance the well being of the individual and help minimize the impact of stress exposures inherent in the profession (Taylor, 1989). Moreover, subsequent research has shown that hopefulness is associated with fewer trauma symptoms in emergency workers responding to an earthquake (Carr, et al., 1996).

This segment also explores how these same traits, when taken to an extreme, can create unrealistic expectations that are problematic for the responder; such as expecting oneself to be in control of oneself and one's environment all the time and always be able to create positive change. Likewise, First Responders often respond to stress by engaging in problematic coping strategies. For instance, the rate of domestic violence among law enforcement families seems to be growing at a much faster rate than among the general population (Ussery & Waters, 2006). Fire and rescue professionals also experience higher rates of domestic violence and divorce than the general

population (De Gaglia, 2006). According to Hackett and Violante (2003), anecdotal evidence suggests that rates of alcohol abuse, depression, and divorce are higher among police officers than the general public. Statistics also indicate that the suicide rate is possibly 50% higher than the national average. Like police officers, research on firefighters suggests that their rates of problem drinking are high as well (Boxer & Wild, 1993; Corneil, 1995; McFarlane, 1998).

This segment on *Responder Personalities* lets clients know that the clinicians at WCPR understand them and their context. This is important because the First Responders work regularly puts them in contact with situations others would rather not think about. Many have encountered clinicians who were overwhelmed by the types of events they relate to them.

A presentation called *Sleep Hygiene* presents practical solutions directed towards enhancing a responder's ability to get the sleep they need. Problems with sleep are common in the immediate and long-term aftermath of trauma (Lavie, 2001). The DSM-IV-TR diagnosis of PTSD includes two sleep related disturbances in its diagnostic criteria: 1) the reexperiencing of the traumatic events in the form of nightmares, and 2) difficulties in initiating and maintaining sleep (American Psychiatric Association, 2000). Evidence suggests that the immediate onset of a sleep disturbance after a traumatic event can predict future psychiatric and physical symptoms, such as PTSD, alcohol dependence and reduced immune functioning (Lavie, 2001). Both behavioral and pharmacological

therapies have demonstrated usefulness in treating sleep disturbances. The *Sleep Hygiene* presentation outlines these two approaches.

The *Family Issues* segment helps responders acknowledge maladaptive coping techniques they are using and how these coping mechanisms impact family relationships. Those who experience trauma generally have a heightened need for social support, often found within the context of immediate family members (Oldham, Riba, & Tasman, 1993). However, family members can be indirectly affected by the trauma if they learn graphic information about the circumstances of the trauma. Thus, the support system can be compromised. Family member support systems can be further depleted when depended upon to maintain supportive roles for long periods of time. Even when support is available, First Responders may choose not to discuss their experience for fear of burdening others. Thus, the responder may erect what is referred to as a "trauma membrane", engaging in disclosure only with others who experienced a similar trauma in the past (Lindy & Grace, 1985). This can foreclose opportunities for intimacy and needed help from family members. This psychoeducational segment offers First Responders a chance to conceptualize how their traumatic incident impacted their familial relationships and also includes a facilitated discussion regarding how a significant relationship affected the responder's reaction to their critical incident.

Relapse prevention seeks to provide individuals with coping strategies to prevent a slip from becoming a full blown relapse (Irvin, Bowers, Dunn, & Wang, 1999). According to Marlatt and Gordon (1985), there are common cognitive, behavioral, and affective mechanisms associated with the process of relapse, regardless of the problem behavior. The relapse prevention model conceptualizes addiction as resulting from maladaptive habits rather than a purely physiological response to substance use. The results from a meta-analysis study evaluating the effectiveness of relapse prevention strategies found them effective, particularly for those with alcohol problems and polysubstance use disorders. Additionally, a number of medications have demonstrated efficacy in preventing relapse of PTSD symptoms (Davidson, et al., 2003; Martenyi, Brown, Zhang, Koke, & Prakash, 2002). WCPR's presentation on *Relapse Prevention* includes a humorous description of rules and regulations for joining the "burnout club", as well as a clear delineation of risk factors associated with substance use relapse, and an overview of areas in which to set goals so as not to fall back into similar patterns that led them to WCPR in the first place.

Substance Abuse

Epidemiologic studies support the comorbidity of two disorders: PTSD and substance abuse, particularly alcohol abuse (Kulka, et al., 1990; Wedding, 1987). A study conducted using firefighters involved in a bushfire demonstrated that PTSD was significantly associated with alcohol abuse (McFarlane, 1988).

Kosten and Krystal (1988) suggest that the neurochemical properties of alcohol reduce the symptoms associated with PTSD. For example, alcohol acts on the locus coeruleus, which modulates the alarm reaction (Brick & Pohereckky, 1983; Lynch, et al., 1983). Likewise, norepinephrine dysregulation is believed to be a central feature of PTSD, and alcohol decreases the activity of norepinephrine projection of the nucleus (Southwick, et al., 1993). For these reasons, a person experiencing a stress reaction might self-medicate using alcohol.

For many years it was thought that a client must hit "rock bottom" and participation in treatment must be voluntary for addiction treatment to be effective (Mueser, Noordsy, Drake, & Fox, 2003). Subsequent research indicates that the sooner an addict is admitted to treatment, the better the prognosis for recovery, and that mandatory treatment can be effective (Waters, Roberts, & Morgen, 1997). Education regarding substance abuse is provided to residents, as is an opportunity to engage in the initial exploration of treatment geared towards First Responders. At the outset of the program residents fill out the Detailed Assessment of Post-traumatic Stress (DAPS), designed to gage a respondent's substance use. Many residents are initially in denial of any substance use problems; however, through education, destigmatization, and direct confrontation, they begin to acknowledge this issue.

Midway through the program an Alcoholics Anonymous (AA) Meeting (Trice, 1958) for First Responders is held. Clinicians and staff, as well as

residents attend this meeting, thus providing evidence to residents that they are not alone in having used substances as a coping mechanism and making them aware of the possibility for change. Peer staff and clinicians with substance use issues openly acknowledge their own struggles with alcohol and drugs during this meeting. Clients are introduced to the 12-step meeting as a potential long-term support mechanism, given that alcoholism and drug abuse are disorders characterized by constant relapse that cannot be handled by crisis intervention strategies alone. Some residents may not have an alcohol problem; nonetheless, attending this meeting is mandatory for everyone. The rationale for this is that the resident may in the future be in a position to help a friend or colleague by taking them to a meeting. First Responders work in a helping profession and are often motivated by the logic of helping others (J. Fay, personal communication, June 28, 2008).

When working with clients who experience the comorbid occurrence of both trauma responses and substance abuse, one treatment issue to keep in mind is determining which is the primary disorder. It is believed that the client with a primary PTSD diagnosis will experience some alleviation of their substance abuse symptoms with PTSD treatment, and a client with a primary substance use disorder will experience some trauma relief though a reduction in substance use (Brems & Johnson, 1997). Obviously, both issues need to be addressed and patients with comorbid disorders are best served through non-traditional programs

that integrate substance use treatment with mental health needs (Brems & Johnson). When substance use has become an acute problem, according to program policy, it must be addressed prior to participation in the WCPR program, where only physician-prescribed pharmaceuticals are allowed. Thus, some potential participants are directed towards programs that focus on substance abuse and detoxification prior to entering the weeklong WCPR program.

Addressing Earlier Traumatic Issues

Often clients face issues from their past that remain unresolved. WCPR clinicians have found that some responders who experience intense distress after an event have a history of childhood traumatic experiences, which is consistent with research on stress disorders (Briere, 1992; Ford, 1999; Yehuda & McFarlane, 1995). These unresolved historical traumas may contribute to the level of distress the client is experiencing with respect to a more recent incident. Biological research on trauma suggests that possessing a genetic variation in the *FKBP5* gene, involved in glucocorticoid signal transduction, places individuals who have had significant childhood trauma at risk for later development of PTSD by permanently altering their hypothalamic-pituitary-adrenal axis (HPA axis) sensitivity (Binder, et al., 2008). When a responder has personally experienced a similar trauma to that of a critical incident to which they respond, they are likely to re-experience painful memories from their own past (Cunningham, 2003; Keenan & Royle, 2008; McCann & Pearlman, 1990). Helping a responder reveal

and discuss early traumatic experiences allows connections to be made with their current stress response. Much of this work is done within the context of the group debriefing protocol. Some questions that are used by the clinical psychologists to assist residents in understanding how early experiences affect their current response to stress include:

1. Where and when have you felt this way before?
2. As a result of my early experience, I believe that I…

   I continue to feel like I…

   I am afraid that I…
3. What do you know about yourself as an adult (beliefs, skills, traits) that would challenge earlier beliefs?
4. How would your life be different if you were able to reject the old beliefs?

In addition to childhood trauma impacting a resident's response to recent traumatic experiences, cumulative stress from consecutive traumas may also inform their response. For example, a client's critical incident may actually be very similar to other incidents they have been able to cope with adequately in the past; however, the accumulation of incidents makes the most recent one intolerable (Fay, 2009). During the program, peer staff assist residents in listing all the critical incidents in which they have been involved. The categories of incidents include the following: 1) line of duty death/injury, 2) suicide of a colleague, 3) death/serious injury to a child, 4) prolonged failed rescue, 5) mass

casualty incident, 6) victim known to respondent, 7) safety jeopardized, 8) administrative/colleague betrayal, 9) excessive media coverage, 10) other. Creating this list helps the resident recollect every incident to which they have been exposed that may be contributing to their current condition.

Goal Setting

After experiencing a traumatic event, individuals often experience a transformation in the way they view the world. Basic belief systems tend to shift and people often struggle with questions about the purpose and meaning of life, the reason for suffering, why the event happened to them, and the impact it will have on their future (Emmons, Colby, & Kaiser, 1998). Thus, such an event can impact an individual's goals for the future, causing them to reexamine their priorities. Research indicates that goals are important in creating meaning in the wake of trauma by providing structure, unity and purpose to a person's life (Emmons, et al., 1998). Furthermore, it is thought that a commitment to certain goals can promote acceptance and adaptation to loss. Intrinsic goals which pertain to intimate relationships or spirituality are associated with finding meaning in the event, in marked contrast to goals related to aspirations for material success and social recognition. Moreover, self-rated recovery is more strongly associated with spiritual goals such as pleasing God and engaging in religious traditions, while goals of avoiding stress and being mentally healthy were negative predictors of

recovery. This research suggests the importance of helping those who are recovering from trauma identify appropriate goals.

One trait that responders tend to possess is the ability to identify a problem and work towards a resolution (Benner, 2000). This strength is drawn upon in the service of treatment. At the conclusion of the program residents are encouraged to develop short and long term goals they will use to improve their health and general well being. A 90-day action plan is created which addresses goals relating to family and relationships, employment, health, their critical incident, and WCPR. This action plan serves as a contract and is signed by the resident and a staff member. It is used as a component of the post-retreat support after the residential portion of the program ends. During this process residents anticipate issues they will be dealing with as they exit the supportive environment they have inhabited for the past week. They design steps that are concrete and measureable (e.g., "I'm going to work out three days a week" vs. "I am going to improve my health").

Some WCPR attendees are encouraged to return to the program as peer counselors, serving as role models and lending support to the healing process of other participants. The transformation from client to peer is not immediate. One peer reported that "The first time I came back I was half client and half peer counselor; the next time I returned I felt more like a peer counselor than a client" (Fay, et al., 2006).

Family, Work & Retirement Reintegration

Towards the end of the program work is done to help clients prepare for re-entry into their family, work life, or possibly retirement. Often clients are beginning to notice an improvement in how they are feeling. There is optimism about reengaging with family members and returning to work. Nonetheless, there may be many festering wounds that need healing due to emotional distance created by responders as they attempted to maintain emotional composure in the wake of their traumatic event. Likewise, significant others have often taken on additional responsibilities in an effort to reduce the strain on the responder and maintain the household (Paton, Violanti, & Schmuckler, 1999). Therefore, clients are coached to ask their partner or spouse about their week before sharing the details of their experience at the retreat.

Although an effective way of dealing with stress is to discuss critical incidents with one's spouse or significant other, a risk exists that the partner and other family members will develop vicarious traumatization (White & Honig, 1995). Robinson and Mitchell (1993) found that 40% of emergency service personnel indicate that their families are impacted by their own critical incident. Furthermore, Spitzer and Neely (1992) reported increased frequency of domestic violence, substance abuse, divorce, homicide and suicide among emergency service personnel. For this reason, WCPR has developed an annual retreat that addresses the needs of First Responder's spouses and significant others. A full

review of this program is beyond the scope of this dissertation, however additional information can be found on the First Responder Support Network Website (http://www.frsn.org/).

Some clients will return to the same line of work while others may experience a change in responsibilities. Returning to work may require that the individual come in contact with colleagues he or she feels let down by or alienated from as a result of the incident. Clients are assisted in preparing for these circumstances as well as coming to terms with changes in responsibility. If returning to the same line of work, clients need help identifying ways of dealing with future stressors which are inevitable.

Many clients need to face the reality that they are in a position where it is time for them to retire either due to the unlikelihood of being accepted back into service or because they are no longer able to derive pleasure from their work. One thing they must learn is how to take that step without feeling like they failed to live up to their own or others' expectations. Helping a client identify other interests as possible career paths is one way to begin to make this transition. Peers who have also had to leave their career share new directions they have charted in their own lives, demonstrating how it is possible to enjoy a meaningful life outside of the emergency services. These peers can also provide empathy for the difficulty associated with leaving a professional identity.

Administrative / Personal Reactions

In addition to focusing on the critical incident, WCPR's treatment model includes time for the responder to discuss administrative and personal reactions to their traumatic experience. When administrative and personal reactions are experienced as betrayals, they are often particularly painful because they are similar to betrayals by other important people in the First Responder's life. Time is dedicated to understanding these connections.

After a critical incident, some clients report that their supervisors offered them significant support, to the full extent possible. Other clients report the opposite experience. Those familiar with the professions' unspoken code of conduct consistently report that displaying emotions is not considered appropriate behavior for those mandated with protecting others and maintaining safety (Ussery & Waters, 2006). According to one report, "Police culture leads officers to believe that they are a special population that has superhuman abilities and no weaknesses" (as cited in Rudofossi, 2007). Evidence of stress related emotional problems often leads superiors to refer a First Responder for counseling. Depending on the department, this may be perceived as disciplinary action rather than an effort to help the individual with work-induced concerns.

Administrative betrayal can take many forms, but emergency service workers are subjected to "postmortem inquiries" after involvement in a critical incident. Postmortem inquiries may take the form of an internal investigation or a

specially formed public commission, both of which can be extremely stressful for workers. One officer described the experience by saying, “The scrutiny will be as hard to take as the incident itself” (Regehr, Johanis, Dimitropoulos, Bartram, & Hope, 2003). These inquires tend to examine the actions taken by the responder under life-threatening and uncontrollable situations where immediate action is required. The goal of these inquiries is to improve the quality of service, though the process tends to raise fears about possible wrongdoing and criminal responsibility. Testifying in court is the number one-ranked stressor among police officers (Evans & Coman, 1993).

Researchers studying trauma responses in firefighters and paramedics found that those involved in a review process had significantly higher traumatic stress and depression symptoms than did those who were not involved in reviews (Regehr, et al., 2003). Moreover, those involved in reviews were more likely to take mental health leave. Media coverage of the event and the review process itself resulted in higher depression scores. This research supports the assertion made by some people that despite the stress associated with traumatic events encountered in the line of duty, it is actually organizational stressors that cause the greatest degree of distress (Brown & Campbell, 1990; Burke, 1993). Notably, social support within the organization, particularly from superiors, is the primary mitigating factor of organizational stress (Burke, 1993; Buunk & Peeters, 1994; Weiss, Marmar, Metzler, & Ronfeldt, 1995). A slight variation on the primacy of

organizational distress is the idea that it is a combination of organization stress and critical events that makes emergency response work so stressful (Coman & Evans, 1991). At WCPR, clients are asked to share how they were treated by their organization and their friends after experiencing their critical incident(s). Emotions that accompanied the experience are also elicited. Peers often set the tone for this conversation by relating their own stories of feeling let down by their superiors or forgotten by their colleagues who did not call when they were on leave from duty.

There is stigma associated with the review process and many responders experience the loss of community when moved to other duties or placed on leave, feeling abandoned by the people they are closest to professionally and the organizations that previously made claims of being their "family". These experiences can trigger prior issues of abandonment and rejection compounding the trauma. If in the face of administrative or personal betrayal the responder assumes a stance of victimization, he or she relinquishes control over the situation. In an effort to restore a sense of control and help clients connect the current loss with previous experiences of abandonment, WCPR asks clients the following questions:

1. Have you ever felt this way before?
2. Is it possible that the way you are reacting today is connected to something from your past?

3. What strategies did you use to cope with the previous event?
4. Would these strategies work for you today? If yes, what keeps you from utilizing them today? If no, why wouldn't they work?

Eye Movement Desensitization and Reprocessing (EMDR)

In the final stages of the WCPR program, attendees meet individually with psychotherapists trained in performing EMDR treatment. EMDR is a treatment developed in 1989 by Francine Shapiro, Ph.D., designed to reduce fear and anxiety resulting from traumatization. It makes use of right-left visual, kinesthetic, or auditory stimulation while the client mentally focuses on traumatic memories (Keenan & Royle, 2008). This treatment assumes that traumatic memory has three components: an image, a physiological reaction to this image, and a negative evaluation of the self as a consequence of the image. During EMDR all three aspects of the traumatic memory are addressed. The client is encouraged to think about the event and acknowledge any physiological changes these thoughts elicit in their body. They are also instructed to maintain awareness of any associated negative self-evaluations that might be arising for them. The clinician then administers bilateral stimulation for the client, with the goal of gradually reducing the negative emotional response to the traumatic image, the level of physiological disturbance, and modifying the clients self-view to arrive at a more realistic and adaptive perspective.

Assessment Measures

At the conclusion of the program clients are asked to fill out the Trauma Symptoms Inventory (TSI; Briere, 1995), a commonly used paper and pencil assessment measure of current traumatic symptoms that they also completed at the outset of the program. Their responses are compared to their initial entry level of symptoms to assess change over the course of the week. This information is shared with clients, along with areas of possible concern. The Detailed Assessment of Posttraumatic Stress (DAPS; Briere, 2001) is filled out upon entry into the program and then sent to the responders at intervals of 30, 60, and 90 days after completion of the retreat. This assessment tool provides a more in depth measure of the client's current trauma symptoms and coping strategies. Again, this information is used to provide follow-up support to the client and to evaluate the impact of the program over time. Clients also complete the Post-traumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) and a program evaluation survey before leaving the retreat. The PTGI is an instrument for assessing positive outcomes reported by persons who have experienced traumatic events. This instrument is not being used to assess change in First Responders because it is only administered once and it is unclear whether the change measured should be attributed to the traumatic event or participation in the treatment program. The program evaluation findings would provide data for a qualitative analysis of the

program, however this information was not made available to the researcher and therefore is not included.

The TSI will be the primary source of data for this dissertation because it is administered to clients before and after completion of the program and is therefore a strong indicator of the program's impact. The DAPS provides information on a client's lifetime exposure to trauma, when the event that is bothering the client most took place, and the type of trauma experienced.

Trauma Symptom Inventory (TSI). The TSI is a structured, self-report measure composed of 100 items and published by Psychological Assessment Resources, Inc. It is designed to assess the psychosocial, emotional, and behavioral issues associated with experiencing trauma (Briere, 1995). It takes approximately 20 minutes to administer and indicates which psychological symptoms the First Responder is or is not experiencing, without any specific reference to a given traumatic event. Permission was obtained from the publisher on 9/19/05 to modify the item booklet instructions to capture current experience, rather than experiences over the past 6 months. Each item is rated on a 4-point scale that reflects the severity of symptoms, (0= never (it is not happening at all); 1 and 2 = sometimes (it is happening, but not often); 3 = often (the person is currently having this experience)). As with any self-report measure, the TSI alone is not sufficient to establish a diagnosis of PTSD, but is considered a useful component of a comprehensive PTSD assessment battery. Elhai, Gray, Kashdan,

& Franklin (2005) identified 81 different adult trauma assessment measures in use. Additionally, they found that 23% of the clinical users, and 6% of the research users used the TSI (Elhai, et al., 2005).

The TSI assesses areas of trauma-related distress and psychosocial effects of trauma in the individual, providing a measure of trauma related symptoms (Briere, et al., 1995). The TSI analytical software (Version 1) converts the raw scores into *T*-scores and gives the test output in the form of three validity scales – Atypical Response (ATR), Response Level (RL), and Inconsistent Response (IR) - which measure unusual, exaggerated, or inconsistent responding, respectively.

There are 10 clinical scales. The first, Anxious Arousal (AA), refers to hyperarousal symptoms. Depression (D) indicates dysphoric affect and thoughts. Anger/Irritability (AI) refers to affect and behavior. Intrusive Experiences (IE) indicate flashbacks, nightmares or intrusive thoughts. Defensive Avoidance (DA) refers to avoiding doing an activity or thinking about an event. Dissociation (DIS) refers to out of body experiences and numbing. Sexual Concerns (SC) are indicated by sexual dissatisfaction or dysfunction. Dysfunctional Sexual Behavior (DSB) refers to sexual behavior with the potential for self-harm. Impaired Self-Reference (ISR) suggests a personality disorder diagnosis or a history of abuse or neglect. Finally, Tension Reduction Behavior (TRB) refers to self mutilation, suicide threats, or anger outbursts.

Copyright permission is not granted to reproduce a test in its entirety for any publication. However a select few items are offered as examples of the types of information gathered by the TSI. *Being startled or frightened by sudden noises* is an example of an item assessing Anxious Arousal. *Feeling worthless* is an indication of depression, and *Getting angry when you didn't want to* is an indicator of the Anger/Irritability scale.

Five of the clinical scales (AA, D, AI, IE, and DA) measure symptoms closely related to the DSM-IV-TR symptoms of posttraumatic stress disorder (McDevitt-Murphy, Weathers, & Adkins, 2005). The other five clinical scales (DIS, SC, DSB, ISR, and TRB) measure additional symptoms often seen in trauma survivors. Higher *T*-scores on the clinical scales indicate a greater degree of symptomatology; *T*-scores of 65 and higher are considered clinically significant (M=50, SD=10) (Briere, 1995). In addition, there are three broad factors (Trauma (TR), Dysphoria (DYS), and Self (SLF)) representing scales that are intercorrelated. The TR scale is a measure of traumatic stress and derived from the sum of four clinical scales (IE, DA, DIS, ISR) representing 34 items (Norris & Hamblen, 2004). The DYS scale measures generalized dysphoria by combining three clinical scales (AI, D and AA) representing 25 items. The remaining summary scale, SLF, largely represents sexual trauma and dysfunction and is a generated by summing three clinical scales (TRB, SC, and DSB) representing 41 items.

The TSI scales have evidence of reliability and validity with a standardization sample, university sample, clinical psychiatric sample and Navy recruit sample (Briere, et al., 1995). The mean reliability coefficient of the 10 clinical scales is $\alpha = 0.86$ (0.74 to 0.91), thus indicating that they range from an acceptable to a good level of inter-item correlation. Good correspondence between the TSI and another well-established PTSD measure, the Clinician-Administered PTSD Scale, has been demonstrated (McDevitt-Murphy, et al., 2005).

Detailed Assessment of Posttraumatic Stress (DAPS). The DAPS (Briere, 2001) is a 104-item, self-report measure used in the diagnosis of posttraumatic stress disorder (PTSD) and acute stress disorder (ASD). It evaluates the three PTSD symptom clusters (Reexperiencing, Avoidance, and Hyperarousal). Three features associated with PTSD are also assessed: Trauma Specific Dissociation, Suicidality, and Substance Abuse. The scales on the DAPS have high internal consistency (.88 to .92) and greater content coverage than most current PTSD measures. The instrument assesses recent and past DSM-IV trauma. However, the majority of the assessment focuses on the single trauma causing the individual most distress. Items are rated according to frequency of occurrence using a 5 point Likert scale (never, less than once a week, about once a week, 2 or 3 times a week, 4 or more times a week). The DAPS yields information regarding the severity and clinical significance of the individual's posttraumatic symptoms.

A few example items include: “Someone saying you drink too much” as an indication of Substance Abuse, “wanting to end your life” as a measure of suicidality, and “feeling like the experience was happening again even though it wasn’t” to assess for Reexperiencing symptoms.

The DAPS contains two validity scales that help identify individuals who are over or underreporting psychological symptoms. The first validity scale is the Positive Bias (PB) scale, which evaluates the extent to which respondents deny low-level psychological symptoms that most people would endorse to some degree. High scorers on this scale are likely to be defensive or avoidant and interested in presenting themselves as psychologically symptoms-free. The other validity scale is the Negative Bias (NB) scale. The NB scale assesses a person’s willingness to endorse unusual phenomena or seemingly unlikely experiences that most individuals in the standardization sample rarely endorse. Individuals who score high on this scale may be experiencing unusual phenomenon or they may be attempting to appear especially symptomatic, either as a cry for help or for some secondary gain (Briere, 2001).

The diagnostic utility of the DAPS was examined to see how well it predicts the presence or absence of PTSD by comparing it to the Clinician-Administered PTSD Scale, which is a well established interview measure used to diagnose PTSD. The results indicated that the DAPS has good sensitivity (.88) and specificity (.87), yielding a diagnostic efficiency rating of .87 (Briere, 2001).

In a review of instruments commonly used to assess traumatic event exposure and posttraumatic effects, 9% of clinical users and 3% of research users employed the DAPS (Elhai, et al., 2005).

Treatments for trauma incorporated into the WCPR program

The idea that troubling or traumatic events need to undergo some mental transformation to reduce their capacity to cause distress is not new (Breuer & Freud, 1974). However, how this end can be achieved has caused controversy. Recent theories of therapeutic change tend to focus on emotional processing as a partial explanation of necessary transformation, with emphasis placed on self-disclosure being an important part of the process (Foa & Kozac, 1986). Self-disclosure is a key element of many psychological interventions, though it may take a range of forms from simple details of fact to complex, personally-meaningful narratives. Likewise, traumatic experiences often result in disruptions of personal relationships, self-schemas, and life goals which need to be addressed. Emotional self-regulation is frequently affected, resulting in anger, helplessness, or anxiety (Rudofossi, 2007). Stress disorders can lead to biological changes, such as adjustments in cortisol levels, and can have enormous impact on information processing. Thus, treatments for trauma must be multifaceted in approach in order to deal with the variety of repercussions that may occur. Specific treatments have evolved to address critical incidents, as traumatic events are referred to in the

world of First Responders. These population-specific treatments and other trauma therapies that are integrated into the WCPR treatment program will be reviewed.

Psychological Debriefing

Psychological debriefing, also known as Critical Incident Stress Debriefing (CISD), is an immediate intervention provided to First Responders after a potentially traumatic event (critical incident). Prior to 1982 a variety of interventions, known as "debriefings", were implemented by military, law enforcement, and hospital personnel. However, it was not until 1982 that J. Mitchell, a former Baltimore County firefighter, formalized the steps of the actual debriefing process, creating a protocol for CISD. Also known as the Mitchell Model, CISD was originally used in response to the Washington Air Crash, which resulted in 76 fatalities. The firefighters, police, disaster managers, and paramedics who attended the voluntary debriefings reported that they were helpful (Hokanson & Bonnita, 2000).

CISD is a formalized seven phase group discussion pertaining to the traumatic experience. The group consists of emergency responders who were all involved in the same incident. Generally, trained peers and at least one mental health professional conduct the psychological debriefing. The facilitators help officers who experience a critical incident lower their distress and gain didactic information and emotional support (Rudofossi, 2007). The seven stages of CISD consist of:

1) an *introduction* phase where the process is described and confidentiality is established,
2) a *fact* phase where emergency responders state who they are and their role in the incident (what they saw, heard, smelled, touched, and did),
3) a *thought* phase where responders share his or her first thoughts after the incident,
4) a *reaction* phase were participants explore personal reactions to the event,
5) a *symptom* phase where signs and symptoms of critical incident stress are discussed and normalized,
6) a *teaching* phase where education about how to deal with stress is provided, and finally,
7) the *reentry* phase where participants are encouraged to ask questions, discuss further issues that have come up, and explore returning to duty (Malcom, Seaton, Perera, Sheehan, & Van Hasselt, 2005).

The primary goal of psychological debriefing is to help the officer function in order to maintain occupational effectiveness, much like interventions used to treat soldiers at war where the objective is to return the individual to the theatre of operations. Psychological debriefing differs from grief and trauma therapy, where the goal is to help a client live a pleasurable and meaningful life both at work and at home, and not necessarily return to their previous line of work.

Bohl (1991) examined police officers three months after exposure to a critical incident. One group of officers was given a brief psychological intervention while a second group received no intervention. Those who participated in the intervention had decreased rates of stress symptoms as compared to the non-treatment group. Another study found similar support for CISD (Leonard & Alison, 1999). Many other studies indicate that psychological debriefing does not yield statistically significant effects (Carlier, van Uchelen, Lamberts, & Gersons, 1998; Carlier, Voerman, & Gersons, 2000; Harris, Baloglu, & Stacks, 2002) and there is strong criticism of the way debriefing research is conducted.

Some of the limitations of the research on CISD include differences in the treatment and control groups with regard to self selection into one group or the other. For example, those who choose to participate in CISD have in some instances been shown to have had more shots fired and more people killed or injured in the incident than those who do not participate (Leonard & Alison, 1999). Non-random assignment to the treatment and control groups limits the ability to extrapolate from the study's findings. Additionally, because of the pressure on officers to appear as if they are in control and well adjusted, reliance on interviews to assess the effectiveness of CISD may be problematic. Moreover, the transparency in intent of many of the self-report measures used to evaluate

First Responders allows for the possibility that individuals could “fake good”, providing healthy responses when they are truly having difficulty.

The goals that are associated with CISD impact the way it is evaluated in the literature. For example, those who believe it provides social support and emotional assistance tend to find that debriefing works based on ratings from emergency responders (Robinson, 1989; Robinson & Mitchell, 1993; Temple, 1991). When the aim of CISD is to reduce post trauma symptomatology, the treatment’s effectiveness is less clear (Moran, 1998).

Moran (1998) suggests that an individual with a defensive coping style who would typically utilize suppression could actually feel worse after participating in the debriefing process. However, those individuals that tend to cope by focusing on the incident and forming a coherent narrative may experience improvement as a result of debriefing. Moran states that it is unreasonable to think that a single strategy would work for everyone. Nonetheless, the author goes on to suggest that when debriefings allow the individual to decide whether or not to participate, they may actually be appropriate for people with either style of coping.

Though research tends to focus on negative outcomes associated with traumatic experiences, some individuals are able to identify positive outcomes, such as newfound meaning in life and newly acquired knowledge resulting from the incident (Shepherd & Hodgkinson, 2006; Werner, Bates, Bell, Murdoch, &

Robinson, 1993). This research provides evidence that debriefings should make room for discussion of both positive and negative feelings associated with the incident.

After 1997 it was recommended that CISD be offered in the context of Critical Incident Stress Management (CISM), an integrated system of pre-incident training, initial post-incident defusing, group debriefing, and further counseling (Mitchell & Everly, 1997). Supporting the contention that CISD should be a component of broader care is research conducted by Richards (2001) comparing a field trial of CISD delivered as a stand alone intervention with an integrated CISM intervention for victims of armed robbery. They found that embedding CISD within an integrated CISM system significantly reduced the levels of long-term morbidity in crime victims. It is worth noting that meta-analytic findings by Roberts, Everly, and Camasso (2005) explored the effect size of multicomponent CISM. The results from this study showed that there was a high effect size associated with this form of treatment supporting the use of comprehensive, multifaceted crisis intervention. In contrast, they found that short one-shot debriefings had low overall effect sizes that were not statistically significant.

WCPR performs extended debriefings, which take place over the course of several days. The debriefing takes place at a minimum of several weeks following a critical incident, but more likely, several months or years later. Like CISD, which integrates additional counseling into the treatment approach, WCPR

initiates contact with clients weeks before entry into the program and maintains contact for at least three months thereafter.

Cognitive Behavioral Trauma Therapy (CBTT)

Cognitive behavioral treatments for trauma include brief and prolonged exposure treatments, along with an emphasis on building a therapeutic relationship with the client. CBTT also utilizes cognitive reframing strategies to reduce dissonance between information contained within the client's traumatic memories and the client's overarching beliefs about the world and themselves (Smyth, 1999). Cognitive behavioral therapists believe that it is not the traumatic event that elicits distress, but rather the patient's thoughts and beliefs about the event that determine the outcome. They further theorize that the event is not fully assimilated by the client but rather split off through dissociative processes.

Assimilation is a form of cognitive-reframing in which dissonance formed as a result of the traumatic event is reduced (Smyth, 1999). For example, cognitive reframing would attempt to address contradictions encountered by trauma survivors, such as the belief that a child's death cannot be reconciled with the client's previously held belief that the world is a just and predictable place. Cognitive-reframing uses metaphors, Socratic questioning, and didactic information to correct pathogenic beliefs. This methodology is based in the rational-thinking-strategies developed by Beck (1976) and Ellis and Harper (1975).

The other central component of CBTT is exposure. Clients are first taught a series of coping techniques before gradual exposure to their feared stimulus, starting with imaginal exposure and moving towards in vivo exposure. Exposures are initially brief in duration and gradually increase to a prolonged exposure period. Over time the client gains mastery over the feared experience and is desensitized to the effects the exposure previously had over them. Foa (1993) developed the prolonged exposure technique with the goal of reducing extreme emotional distress believed to distract from the patient's ability to assimilate the traumatic event. One critique of the CBT approach is that there is not enough probing into historical issues that may have contributed to the immediate mental health need.

Unlike traditional CBT approaches that remain focused on the here and now, WCPR explores a client's history, paying close attention to prior trauma that may be influencing the current response. For instance, a client who experienced an emotionally abusive childhood and never felt capable of living up to their parent's expectations might be particularly traumatized by an incident that resulted in their dismissal. Understanding that the recent traumatic response was partially related to a vulnerability to feeling like a failure that developed in childhood can help the responder integrate their experience.

Additionally, some claim that EMDR is actually a modification on CBT exposure therapy. The EMDR treatment is different in that it includes a

distraction component for clients as they process their trauma. EMDR is a key piece of the WCPR treatment model.

Narrative Exposure Therapy (NET)

Narrative exposure therapy is a treatment approach which combines elements of testimonial therapy and cognitive behavioral therapy (Ehntholt & Yule, 2006). Originally, it was developed as a short-term treatment emphasizing the exposure element of CBT, but adapted for a narrative format. Rather than focus on a single event in a person's life, NET encourages the creation of a life narrative that includes all traumatic events and highlights both positive and negative emotional moments. This comprehensive approach is the main difference between NET and most CBT approaches (Foa, Rothbaum, Riggs, & Murdock, 1991). The primary goal of NET is to create a coherent narrative and bring about habituation of emotional responses to reminders of the traumatic event. The therapist assists this process by inquiring about thoughts, feelings, emotions, and meanings associated with the narrative and by eliciting sense memories (sight, smell, auditory) and sensations attached to the trauma. Through this process, an autobiographical memory is created and habituation is accomplished. The narrative allows the client to understand his or her own development as a person after encountering their first and possibly second and third trauma. This can also be a limitation of this approach because of the time needed to create a narrative for a person with many traumatic incidents.

During the WCPR treatment program clients are encouraged to focus on a single work-related trauma, and yet they are encouraged to share other related traumas that may have taken place earlier in their lives. In this way, a life narrative of trauma is created in the manner of Narrative Exposure Therapy. The idea of sense memories is first introduced during one of the early psychoeducation presentations on ERES. It describes how First Responders often get upset when they are reminded about their trauma due to seeing, hearing, feeling, smelling, or tasting something. This prepares the responders for similar lines of questioning during the extended debriefing process in which they participate over the course of several days.

Group Therapy

Group therapy is an established method for treatment of trauma (Johnson & Lubin, 2000; Schnurr, et al., 2003; Shea, McDevitt-Murphy, Ready, & Schnurr, 2009; Smyth, 1999). Therapeutic factors that are believed to be important for improvement include the reduction in isolation and recognition of universality (Hall & King, 1997), the instillation of hope, and interpersonal learning in the group atmosphere (Jehu, 1988; Longstreth, Mason, Schreiber, & Tsao-Wei, 1998). According to DiNunno (2000), group therapy provides a number of advantages, including: 1) an environment where relationship deficits can be worked on; 2) a reduction in isolation resulting from a sense of belonging in a group; 3) the freedom to air painful feelings as a result of group acceptance; 4)

establishment of trust; and 5) experimentation with new behaviors. Despite its usefulness, group therapy is contraindicated for clients who may have logistical problems attending a group, intellectual deficits, or characterologic problems that cause severe interpersonal difficulties (Yalom & Leszcz, 2005).

The American Group Psychotherapy Association (AGPA) asserts that group psychotherapy can be particularly helpful for people accustomed to working together such as police officers and firefighters (Ulman, 2005). For this reason, the New York Times Neediest 9/11 Fund allocated 2 million dollars in financial support to the AGPA to do group work with people affected by 9/11.

WCPR makes use of the group modality for the majority of interventions employed during the week-long treatment program and groups typically range in size from 6-8 participants. WCPR clinicians pay special attention to group cohesiveness, keeping the groups small so each client has plenty of time to share their experience. Clients also eat all their meals together and share a dormitory which promote cohesiveness as well. Homogeneity is believed to be an important element of a cohesive group (Beck, 2005). WCPR ensures this factor by creating a group made entirely of First Responders who have a work-related critical incident they would like to address. It is believed that feelings of isolation, mistrust, and shame associated with trauma are more easily treated in such an environment (Johnson & Lubin, 2000).

One problem with highly homogeneous groups is that clients can become attached to their identity as a victim and the homogeneous group can create dynamics which protect a client from confronting this reality. To address this concern, Herman (1997) proposed a treatment model that progresses from homogenous to heterogenous stages. WCPR does this by emphasizing the homogeneity of the group at the beginning of the week and gradually working towards differentiation of each client's experience by the end of the week. Special consideration is given to re-entry into their lives with partners and work after leaving the treatment program. Avoidance is one of the main symptoms addressed in the group format as all clients are expected to verbalize their traumatic experience. Flooding is the major concern when exposure is used to address trauma. This is monitored closely by the presence of multiple clinicians and peer observers that are specifically watching for signs that a client is becoming overwhelmed or trying to cope through isolation.

Eye Movement Desensitization and Reprocessing (EMDR) Therapy

Traumatic experience is largely affective and somatic, therefore effective treatment should also address the body. The theory behind EMDR is that as the client focuses on the traumatic experience and associated negative beliefs, feelings, and sensations, the episodic memory is processed and consolidated as a semantic memory, which is believed to bring about adaptive resolution (Solomon & Heide, 2005). Based on the current understanding of memory, it is thought that

the episodic memory of the traumatic experience is stuck in the limbic system and never transferred to the neocortex for long term storage. In the limbic system, the memory can continue to generate frightening, vivid images of the trauma and associated sensory experiences until it is processed through a treatment like EMDR.

The phases of EMDR treatment provide a systematic way to explore and process the negative experiences that are contributing to dysfunction (Shapiro, 2007). Many people feel better after a single session of EMDR treatment. To become a certified EMDR clinician requires extensive training, including a weeklong Basic EMDR course, experience conducting 50 EMDR sessions, and participation in 20 hours of consultation with an EMDR certified consultant.

The efficacy of this treatment approach has been validated in approximately 20 controlled studies, in which it was compared to pharmaceuticals (van der Kolk, et al., 2007) and various forms of psychotherapy (Carlson, Chemtob, Rusnak, Hedlund, & Muraoka, 1998; Edmond, Rubin, & Wambach, 1999; Ironson, Freund, Strauss, & Williams, 2002; Jaberghader, Greenwald, Rubin, Dolatabadim, & Zand, 2004; Lee, Gavriel, Drummond, Richards, & Greenwald, 2002; Marcus, Marquis, & Sakai, 1997, 2004; Power, McGoldrick, Brown, & al., 2002; Rothbaum, Astin, & Marsteller, 2005; Scheck, Schaeffer, & Gillette, 1998; Taylor, et al., 2003; Vaughan, et al., 1994). Strong evidence for the benefits received from EMDR was found for people who have had single

traumatic events, people who have not benefited from traditional psychotherapy, inpatient veterans, and substance abusers (Chemtob, Tolin, van der Kolk, & Pitman, 2000). These populations are similar in many ways to the participants at WCPR. Some researchers are critical of EMDR treatment and conclude the following: there is no neurobiological explanation for its treatment effects, the benefit derives from the placebo effect, and finally, that it is not actually a distinct treatment, but could rather be subsumed by exposure treatment (Perkins & Rouanzoin, 2002).

One study examined the neurophysiological impact of EMDR on the brain using the non-invasive technology of Single Photon Emission Computed Tomography (SPECT) scans (Levin, Lazrove, & Van der Kolk, 1999). Scans were administered before and after EMDR treatment for six PTSD participants who each received three EMDR sessions. The investigators reported an increase in bilateral activity in the anterior cingulated cortex (ACC), a part of the brain that modulates the limbic system and helps distinguish real from perceived threat. The authors concluded that the increase in ACC activity suggests a decrease in hypervigilance. These researchers also found an increase in prefrontal lobe metabolism, suggesting greater ability to make sense of incoming sensory stimulation.

At WCPR, all clients participate in an EMDR session with an EMDR trained clinician. WCPR modifies a traditional EMDR session in two ways.

EMDR typically begins with a resource installation, however WCPR conducts the resource installation at the beginning of the week, allowing the client to learn containment strategies for managing intense feelings and become familiar with bilateral stimulation before actually beginning to process their entire trauma experience. In addition to separating the resource installation from the actual EMDR session, WCPR has modified the resource installation using language which is tailored specifically for First Responders. During this one-on-one session with a trained EMDR clinician the client is helped to identify a trait that that they will need in order to fully participate in the week's program, a safe place they can go to in their mind should the need for grounding arise, and someone they identify that could serve as an inner advisor to help them gain perspective should they become overwhelmed. The inner advisor is described as a back-up, a mentor, or someone who would have their back. After a trait is identified the clinician asks the client to localize the feeling that goes along with the accompanying trait in their body and bilateral stimulation is administered. The client is then asked to try and make the sensation stronger and bilateral stimulation is performed again. The same process is followed for the safe place and inner advisor. Many clients find the EMDR treatment helpful even after a single session. Should the client be interested in additional sessions, referrals are made to clinicians in their area who practice using this modality.

The Biology of Trauma

The current understanding of the biological aspects of trauma is constantly evolving as a result of ongoing research. While results in this field are presented as definitive concepts, they only represent our understanding at a certain point in time. Increasingly sophisticated technology allows researchers to visualize the brain operating under various conditions with greater precision. As this technology improves the circuitry of the brain's response to trauma will undoubtedly be revealed in greater detail. What is understood today is outlined below.

How Memories Are Recorded

Memories of ordinary experiences are temporarily stored in the limbic system as episodic memories, which are memories of personal experiences and events (Solomon & Heide, 2005). Episodic memories are autobiographical and include a sense of time and self. Cognitive aspects are stored in the hippocampus, and the associated emotion is stored in the amygdala. As the brain processes these memories over time, aspects of them are abstracted and transferred to the neocortex for long-term storage. The memories of moderately disturbing experiences remain in the right limbic system for a longer period of time than memories of neutral events. Disturbing memories are processed by thinking, talking, and sometimes dreaming about the experience. Traumatic events overwhelm the brain's capacity to process information. The episodic memory of

the experience may be stored in the right limbic system indefinitely and may generate vivid images of the traumatic experience, terrifying thoughts, feelings, body sensations, sounds, and smells. Such unprocessed traumatic memories can cause psychological symptoms of distress.

Coping With Trauma

Humans react to different types of stress with distinct coping strategies: active and passive (Olff, Langeland, & Gersons, 2005). Confrontation, fight, and flight are considered active coping strategies that are usually elicited if the stressor or threat is controllable or escapable. Passive coping strategies such as immobility and disengagement are evoked if the stressor is uncontrollable or inescapable. A recent anatomical study indicates that different neural circuits mediate active and passive emotional coping strategies (Olff, et al., 2005).

Once a trauma has been experienced, seeking social support is considered an active coping strategy. Social support significantly protects against PTSD as described in a recent meta-analysis (Ozer, Best, Lipsey, & Weiss, 2003). Likewise, beneficial effects of disclosing or discussing the event have consistently been reported among individuals who have experienced a wide range of traumatic stressors (Olff, et al., 2005). On the other hand, passive coping strategies, such as social isolation, drinking alcohol, self destructive behaviors, denial, rumination and avoidance are most often maladaptive. Although most individuals use many different types of coping strategies simultaneously, making it difficult to isolate

their unique effects, research indicates that avoidance behaviors are a significant predictor of posttraumatic morbidity (Olff, et al.).

History

In the early 1900s physiologists and psychologists began to explore trauma in laboratory settings (Gersons & Carlier, 1992). They were interested in the physiological and biological reactions of people in threatening situations. In 1904, a young physiologist, Walter Cannon, witnessed an experiment by Rudolf van Magnus, in which the automatic functioning of a cat's intestines was brought to a halt by the administration of adrenalin (Gersons & Carlier). Shortly thereafter, Cannon worked to prove that adrenalin performs a stress function; in the event of a threat, the function of the intestine is altered temporarily to facilitate other functions, such as muscle tension and cerebral tasks required for defense or escape.

Current Understanding of the Biology of Trauma

Living organisms tend to strive towards a dynamic equilibrium, which is called homeostasis. According to the classical conception of stress, this equilibrium is threatened by certain physical and psychological events that are known as 'stressors' (Chousos & Gold, 1992). Consequently, behavior is directed towards appraising the destabilizing potential of the stressor. If the event fails to match some cognitive representation based on previous experience, there is a surge in arousal, alertness, vigilance, focused attention, and cognitive processing

(de Kloet, Joels, & Holsboer, 2005). The interface between the incoming sensory information and the appraisal process is formed by limbic brain structures, which include the amygdala, prefrontal cortex, and hippocampus.

The 'stress response' is reflected in the rapid activation of the sympathetic nervous system, which leads to the release of noradrenaline from widely distributed synapses and adrenaline from the adrenal medulla. Blood concentrations of adrenal glucocorticoids rise to peak levels after 15-30 minutes and then decline slowly to pre-stress levels 60-90 minutes later (de Kloet, et al., 2005). Effective coping implies that the stress response is activated repeatedly when it is needed and is efficiently terminated afterwards.

Research in basic science and functional neuroimaging has helped to identify three brain regions that are involved in the pathophysiology of trauma: the amygdala, medial prefrontal cortex, and hippocampus. The amygdala is involved in the assessment of threat-related stimuli and is necessary for the process of fear conditioning (Davis & Whalen, 2001; Le Doux, 2000). Amygdala hyperresponsivity in subjects with PTSD has been reported during the presentation of personalized traumatic narratives and cues, combat sounds and photographs, and trauma related words (Shin, Rauch, & Pitman, 2006). Amygdala activation has been shown to be positively correlated with PTSD symptom severity and self-reported anxiety.

A second region of interest is the medial prefrontal cortex, which includes the anterior cingulated cortex, subcallosal cortex, and medial frontal gyrus. The medial prefrontal cortex is involved in the process of extinction of fear conditioning and the retention of this extinction (Milad & Quirk, 2002). Individuals with PTSD exhibit persistent inappropriate fear responses in daily life and diminished extinction of conditioned fear responses in the laboratory (Orr, Metzger, & Lasko, 2000; Rothbaum, Kozak, & Foa, 2001), leading to the hypothesis that the medial prefrontal cortex may be impaired in this disorder. Two studies have reported that severity of PTSD is inversely correlated with anterior cingulated cortex volume (Shin, et al., 2006).

A third region of interest is the hippocampus, which is involved in explicit memory processes and in the encoding of context during fear conditioning (Corcoran & Maren, 2001; Eichenbaum, 2000). The hippocampus appears to interact with the amygdala during the encoding of emotional memories (Dolcos, LaBar, & Cabeza, 2004), a process that is highly relevant to the study of trauma and PTSD. Research has found decreased hippocampal volumes in PTSD subject's brains, compared to either non-PTSD trauma-exposed control subjects or trauma-unexposed healthy subjects (Shin, et al., 2006).

Biological Trauma Studies Using First Responders as Subjects

Some of the studies examining brain structures involved in the pathophysiology of PTSD are based on research performed on police officers

suffering from traumatic experiences associated with their line of work. While police officers tend to experience a heterogeneous array of traumatic events, they are more likely than many other populations to have few other co-morbid conditions or to be taking medication (Lindauer, Booij, et al., 2004). Moreover, because of the stressful nature of their work, there is the potential to examine the impact of trauma in a prospective manner rather than retrospectively.

Broca's Area is the structure in the brain believed responsible for applying semantic representations to personal experience. Patients with PTSD may have difficulty cognitively restructuring their traumatic experience as a result of deactivation of this area (Lindauer, Booij, et al., 2004). In support of this hypothesis, a study of police officers using SPECT scans (Single Photon Emission Computed Tomography) found a significant decreased activation in Broca's Area in the PTSD group after exposure to their personal trauma script, suggesting that these individuals might have greater difficulty restructuring their traumatic experience (Lindauer, Booij, et al., 2004).

The authors of a second study hypothesized that police officers with PTSD would have smaller hippocampal volume than traumatized police officers who had not developed PTSD (Lindauer, Vlieger, et al., 2004). They found that subjects with PTSD had significantly smaller total (10.6%) and left (12.6%) hippocampal volumes. In addition, analysis of subjects' reexperiencing scores found that they were negatively correlated with hippocampal volume, indicating

an association between current severity of reexperiencing and smaller hippocampal volume.

Several explanations for smaller hippocampal volume in subjects with PTSD have been put forward. Smaller hippocampal volume could be a preexisting risk factor that makes people more vulnerable to developing PTSD once they are exposed to a traumatic event (Pitman, 2001). Alternatively, traumatic events and subsequent PTSD symptoms may be causal factors leading to a smaller hippocampal volume. Some researchers suggest (Bremner, et al., 1995) that dysfunction of the hippocampus may explain the fragmentation of memories into single sensory phenomena that are clinically seen in patients with PTSD.

How Biological Understanding of Trauma Informs Treatment

Genetic influences explain a substantial proportion of the variance in responses to trauma and may moderate susceptibility to the adverse mental health effects. Research has shown that a polymorphism in the serotonin transporter gene (locus, *SLC6A4*; variant serotonin 5-HTTLPR) moderates risk of PTSD and major depression (Kilpatrick, et al., 2007). In individuals with a significant trauma exposure and low social support, having the low serotonin transporter expression variant made a person 4.5 times more likely to develop PTSD or Major Depression as those with the high expression variant. In the future, clinicians might be able to predict who is at greater risk of experiencing negative trauma

sequelae based on a cheek swab containing cells that could be used for genetic analysis.

A separate study (Rabe, Beauducel, Zollner, Maercker, & Karl, 2006) examined brain electrical activity during the presentation of emotional pictures taken from the International Affective Picture System (Lang, Ohmann, & Vaitl, 1988) to survivors of motor vehicle accidents with PTSD, with subsyndromal PTSD, without PTSD, as well as healthy controls without severe accidents (Rabe, et al., 2006). The positive emotional image included two bunnies, the negative image was a barking dog, and the neutral image was a spoon. An actual photograph of a crashed car lying on its roof was also included. Patients with PTSD and subsyndromal PTSD were characterized by symptoms of anxiety, avoidance, and hyperarousal, and they displayed psychological distress to trauma-related cues. They also displayed a pattern of increased right-sided activation in anterior and posterior regions during exposure to a trauma-related picture as compared with non-PTSD and healthy controls. The authors found an association between the PTSD dimension reexperiencing (i.e. flashbacks, nightmares, intrusive memories) and greater relative right hemisphere activation during exposure to the trauma-related picture, indicating maladaptive information processing. This study highlights patients who might not qualify for a PTSD diagnosis (subsyndromal PTSD) based on the DSM-IV-TR criteria, yet still express similar biological correlates of distress in response to traumatic

experiences. The authors further suggest that if the present results can be generalized to other trauma populations, electroencephalographic (EEG) alpha asymmetry may be used to discriminate different types of pathologic anxiety conditions.

Clinical versus Biological Assessments of Trauma

Clinically, PTSD is characterized by three groups of symptoms. The first relates to reliving an aspect of the trauma, with nightmares or flashbacks eliciting feelings that the traumatic event is taking place again. The second type of symptoms relate to avoiding anything likely to remind the individual of the trauma. Examples include avoidance of situations that bring the trauma to mind, the inability to remember an important aspect of the trauma, and other less specific symptoms such as a noticeable decrease in interest, feelings of detachment or alienation, and the loss of the capacity to express affection. The third set includes symptoms indicative of hyperarousal, such as heightened irritability, sleep disturbances, or outbursts of anger. In the upcoming publication of the DSM-V manual there are revisions to the PTSD diagnosis. The avoidance category is broken into two categories of symptoms: avoidance and negative alterations in cognitions and mood. Additional symptoms relating to negative emotional state and distorted placement of blame are added to the latter category.

Although the clinical diagnosis of PTSD divides symptoms into three or four categories, biological trauma research suggests that it might be more

appropriate to divide these symptomatic responses into two groups. Bremner (1999) proposed two subtypes of acute trauma response, one primarily dissociative and the other characterized predominantly by intrusions and hyperarousal. Moreover, Foa and colleagues believe that different PTSD symptoms, such as hyperarousal and numbing, represent distinct pathological processes (Foa, Riggs, & Gershuny, 1995). For example, in one study the neural activation observed in subjects who dissociated in response to an autobiographical trauma script were different than those observed in subjects who exhibited flashbacks, reliving of the experience, or hyperarousal responses (Lanius, Bluhm, Lanius, & Pain, 2006).

PTSD subjects with a dissociative response demonstrated greater activation of the thalamus, the right superior parietal lobule and cingulated gyrus, the left angular gyrus and bilateral medial prefrontal cortex (Lanius, et al., 2006). By contrast, the flashback/reliving/hyperarousal PTSD group showed greater activation than the dissociative group in the left inferior parietal lobule, left precentral gyrus, and bilateral prefrontal cortex.

Furthermore, grouping PTSD subjects with different symptom patterns in the same diagnostic category may interfere with our understanding of post-trauma psychopathology. According to Judith Herman (1997), author of a contemporary landmark text on trauma,

> responses to trauma are best understood as a spectrum of conditions rather than as a single disorder. They range from a brief stress reaction that gets better by itself and never qualifies for a diagnosis, to classic or simple post-traumatic stress disorder, to the complex syndrome of prolonged, repeated trauma.(p. 119)

The specific trauma symptoms experienced may reflect different neurological changes, which would in turn have implications for the proper form of pharmacological treatment and possibly psychological treatment as well.

A review of the biological literature on trauma alongside the psychological literature on trauma indicates that the two approaches to the topic could be better integrated. If the DSM-IV-TR, largely constructed by psychiatrists, was more informed by the biological findings on trauma it might lead to different symptom categories. The DSM-IV-TR organizes the diagnostic features of PTSD into 6 major categories, requiring symptoms be present in all three of the symptom groups (reliving, avoidance, and hyperarousal) despite neurologic evidence suggesting that the three categories might better be condensed into two categories (Bremner, et al., 1995; Foa, et al., 1995; Lanius, et al., 2006). Further evidence that the categories of the DSM-IV-TR are somewhat arbitrary is the growing use of the term "subsyndromal" PTSD to describe people who have trauma symptoms but do not meet the current diagnostic standards. Research on the biological features of this condition indicates that patients with subsyndromal PTSD have

similar neurologic changes to those who meet the criteria for the PTSD diagnosis (Rabe, et al., 2006). Additionally, trauma literature suggests the need to divide the PTSD diagnosis into two subtypes: simple and complex. Simple PTSD refers to the trauma reaction caused by a single acute trauma, while complex PTSD refers to a trauma reaction caused by a prolonged severe trauma (e.g. prisoner of war or sustained child abuse) (Herman, 1997). As of yet, there are no identified biological features supporting this proposed division.

Trauma Outcome Studies

There is a growing body of literature focusing on the emotional response of secondary victims, such as fire and police workers, paramedics, and medical and mental health professionals who come to the aide of primary victims (Armstrong, O'Callahan, & Marmar, 1991; Jones, 1985; National Institute of Mental Health, 1985; Shepherd & Hodgkinson, 2006). When these professionals respond they may also become primary victims, such as when a firefighter or a police officer is personally injured on duty. Whether their role is one of a primary or a secondary victim, the trauma responses can appear similar. A number of studies examine therapeutic interventions aimed at reducing trauma responses in these populations and other populations exposed to severe trauma (Bichescu, Neuner, Schauer, & Elbert, 2007; De Gaglia, 2006; Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004; Ovaert, Cashel, & Sewell, 2003; Wallis, 2002). These studies serve as a model for the study currently being undertaken,

examining a treatment program for First Responders. A description of these studies follows.

De Gaglia (2006) examined the effect of defusing (a single component of the CISM protocol) on negative affect and agreeableness to seek mental health treatment in fire/rescue professionals exposed to traumatic incidents. The 60 minute defusing was provided within 3 hours of the incident and included an introduction to the process, exploration of the incident, and information about signs and symptoms associated with stress. Participants were divided into three groups: those who requested and received a defusing after a critical incident, those who did not receive a defusing after a critical incident, and individuals who neither experienced a recent critical incident nor received a defusing. All participants completed the State Version of the Multiple Adjective Affect Checklist (MAACL-R) that assesses short-term mood or mood change and a survey about willingness to seek mental health services in the future. Those who received the defusing intervention experienced a significantly greater reduction in negative affect than did the group who received no treatment. Additionally, participation in a defusing was associated with significantly increased willingness to seek mental health services in the future. One major limitation of this study was the self-selection of participants into the treatment group rather than random assignment.

Neuner, Schauer, Klaschick, Karunakara, and Elbert (2004) conducted a study that compared narrative exposure therapy (NET), supportive counseling, and psychoeducation for treating posttraumatic stress disorder in African refugees. The supportive counseling treatment condition focused on interpersonal problems, personal decisions, and plans and hopes for the future, with the goal of strengthening the participant's individual, social, and cultural resources. The researchers expected that psychoeducation would bring relief by explaining the nature of the symptoms caused by traumatic experiences and normalizing the response.

A randomized controlled trial of these three different short-term treatments was carried out and revealed that NET was an effective treatment for adult refugees with PTSD living within a refugee settlement (N=43). Those who participated either received four sessions of NET, four sessions of supportive counseling, or one session of psychoeducation. The results from this study indicated that one year after treatment only 29% of those who received NET still fulfilled the criteria for PTSD, while 79% of the supportive counseling group and 80% of the psychoeducation group still met the PTSD diagnostic criteria. The frequency and severity of PTSD symptoms were assessed using a modified version of the Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1995), and the Self-Reporting Questionnaire 20 (SRQ-20) was used to indicate comorbid symptoms of anxiety and depression.

The major weakness of this study resulted from the small number of participants enrolled. Despite finding that the NET group showed significantly more improvement than the other groups x^2 (2, 38) =9.48, p<.01, the difference in number of participants classified as suffering from severe mental problems one year after treatment was not statistically significant (Fisher's exact test p=-.08). Larger treatment groups would have improved the confidence associated with the findings of this study.

A second treatment outcome study focusing on symptom change also utilized Narrative Exposure Therapy (NET) and psychoeducation (Bichescu, et al., 2007). The treatment population for this study consisted of people in their 60s and 70s who were victims of political detention and torture. Participants diagnosed with PTSD were randomly assigned to receive five NET sessions or a single psychoeducation session. After a six month period, the participant's PTSD and depression levels were re-analyzed using the PTSD section of the Composite International Diagnostic Interview (CIDI; Robins, Wing, Wittchen, & Helzer, 1988) and the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). After six months, four out of nine of those in the NET group, compared with eight out of nine of those in the psychoeducation group, still met the criteria for PTSD. This difference suggests that NET treatment may help alleviate some chronic PTSD symptoms in survivors of torture. Of the three categories of PTSD symptoms analyzed (re-experiencing, avoidance, and

arousal), significant improvement was only found with respect to avoidance and arousal in the NET group. The authors concluded that the narrative approach may be particularly effective at reducing symptoms in these two areas due to the focus on habituation by exposure to their personal traumatic narrative.

Wallis (2002) examined the efficacy of group therapy, as compared to a waitlist control group, in treating adults (N=83) suffering from the sequelae of childhood abuse and/or neglect. Participants met diagnostic criteria for either PTSD, dissociative identity disorder, dissociative disorder not otherwise specified, or borderline personality disorder. Again, symptom reduction was used as a measure of whether or not the treatment program was an effective treatment modality. The Trauma Symptom Inventory (TSI) was administered to the experimental (group therapy) and the control group (waitlist) prior to treatment and again three months later to assess symptom change. The data from the two administrations of the TSI were analyzed using a generalized linear model, and a reduction in symptoms on 7 of the 10 TSI scales (Anxious arousal, p<.01; Depression, p<.001; Anger/irritability, p<.05, Intrusive experiences, p<.05; Defensive avoidance, p<.05; Dissociation, p<.05; Trauma reduction behavior, p<.05) was found for the experimental group therapy condition as compared to no reduction in symptoms on any scale for the control waitlist group. One limitation of this study was the non-random assignment of all participants to either the treatment group or the waitlist control group.

Oavert, Cashel, & Sewell (2003) examined symptom reduction associated with participation in a structured cognitive-behavioral therapy group for juvenile offenders with PTSD and a waitlist control group. The treatment included a narrative exposure component, as well as education and cognitive restructuring elements. Groups of six met twice weekly for a total of 12 sessions, with 43 participants between the ages of 13 and 18 years old. Participants received PTSD diagnoses based on the Children's PTSD Inventory (Saigh, 1989), which is a brief structured interview. Oavert et al. evaluated symptoms pre- and post-treatment using the 20-item Post Traumatic Stress Disorder Reaction Index (Frederick, 1985), the State-Trait Anxiety Inventory (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), the State-Trait Anger Expression Inventory (Spielberger, 1991), and the Children's Depression Inventory (Kovacs, 1992). Supplementary open-ended questions assessed the type of trauma exposure, number and relationship of individuals with whom the juveniles had previously shared their trauma, and prior treatment experience. Oavert et al. collected behavioral data from the juveniles' facility files and examined them for the number of behavior incident reports at 3 and 6 months after admission to the facility.

Ovaert et al. (2003) hypothesized that participants completing treatment would exhibit significant reductions in PTSD symptoms. Analysis of pre- and post- PTSD-RI scores supported this hypothesis. Questions on the PTSD-RI are divided into three symptom clusters, reflecting intrusive experiences, avoidance

behaviors, and arousal. After treatment, significant differences were observed on the Intrusion, $t(42) = 2.22$, $p < .05$, and Arousal subscales, $t(42) = 2.48$, $p < .05$, but not the Avoidance subscale. These researchers further hypothesized that symptom reduction would occur after treatment in the areas of self-reported anxiety, anger and depression; however, these changes were not found to be statistically significant. Their final hypothesis examined whether or not behavioral problems were reduced following treatment. They found that untreated youth with PTSD had higher rates of incident reports than non-PTSD youth. The results from this study indicate that the treatment protocol used is effective; however, the conclusions from this study were limited by the fact that several participants identified for the waitlist control group dropped out of the study, rendering the control group unreliable.

First Responder Trauma Studies

The following set of studies focus on the impact of trauma on First Responders. However, unlike the previous studies, they are not treatment outcome studies; yet, they still provide insight into what characteristic may put First Responders at risk for trauma responses.

Heinrichs et al. (2005) conducted a prospective, longitudinal study of subjective (personality traits and psychopathological symptoms) and neuroendocrine (salivary cortisol and urinary catecholamines) characteristics associated with 43 male probationary professional firefighters. This population

was chosen because firefighters are regularly engaged in intense traumatic events, including exposure to injuries, death, and dangerous situations. They sought to answer the question: What characteristics, present at the time before exposure to traumatic stress, may predict PTSD symptoms and other psychopathological symptoms in a high-risk population 2 years post exposure? The following psychological measures were administered over five different time points: the PTSD Symptom Scale (Foa, et al., 1993), the General Health Questionnaire (GHQ; Goldberg & Hiller, 1979), the Zung Self-Rating Depression Scale (Zung, 1965), the State-Trait Anxiety Inventory (STAI; Spielberger, Goruch, & Lushene, 1970), the Symptom Check List-90-Revised (SCL-90-R; Derogatis, 1983), and the Toronto Alexithymia Scale (Bagby, Parker, & Taylor, 1994). Additionally, the Inventory on Competence and Control Beliefs was used to assess self-efficacy (e.g., an individual's feeling of confidence that they can perform a desired action) (Krampen, 1991).

The authors found that participants demonstrating a high level of hostility and a low level of self-efficacy at baseline had a significant increase in measures of PTSD symptoms, depression, anxiety, general psychological morbidity, global symptom severity, and alexithymia during a 2-year period. Alternatively, individuals with low levels of hostility or high levels of self efficacy at baseline showed no increase in psychopathological symptoms. These results suggest that personality traits, such as hostility and self efficacy, may serve as markers of

vulnerability to the development of psychopathological symptoms after trauma exposure. The results from the biological markers were not predictive of the development of psychopathological symptoms. However, it is interesting to note that awakening cortisol concentrations were consistently lower in the high-risk firefighters with high levels of hostility and low levels of self-efficacy than in the low risk firefighters during the two year period. This difference did not reach statistical significance, possibly due to the small number of subjects.

A study by Carlier, Lamberts, and Gersons (1997) evaluated internal and external risk factors for developing post-traumatic stress symptoms in a police officer population. After an officer experienced a critical incident, they completed assessment measures two weeks, three months, and 12 months after the incident. They found that officers who have trouble expressing their emotions were 2.17 times more vulnerable than others to experiencing posttraumatic stress symptoms. In addition, they found that introversion, trauma severity, insufficient resolution time, dissatisfaction with organizational support, and an insecure job future each increase the risk of posttraumatic stress symptoms by a factor of approximately 1.5. Likewise, police officers without hobbies proved to be 2.87 times more vulnerable than colleagues with a hobby when evaluated 12 months post-trauma.

Three separate studies have examined emergency services personnel exposed to the collapse of Interstate-880 after the 1989 Loma Prieta earthquake in the Bay Area and compared them to controls in San Diego and the Bay Area

(Marmar, et al., 1999; Marmar, Weiss, Metzler, Ronfeldt, & Foreman, 1996; Weiss, et al., 1995). The first study conducted by Weiss et al. (1995) identified predictors of symptomatic distress in emergency service personnel (police, firefighters, paramedics and emergency medical technicians, and California Highway department workers) exposed to this traumatic incident by evaluating exposure, social support, and psychological traits. The participants were divided into three groups: those who worked the I-880 freeway collapse, those who lived and worked in the San Francisco Bay Area the day of the earthquake but were not assigned to Interstate-880 duty, and emergency personnel from the San Diego area. Three hundred and sixty-seven subjects completed a variety of measures designed to analyze symptomatic responses, personality, exposure level to the critical incident, social support, and years of job experience. The specific measures included: 1) SCL-90-Revised (Derogatis, 1992) , 2) Impact of Event Scale-Revised (Zilberg, Weiss, & Horowitz, 1982), 3) Mississippi Scale for Combat-Related PTSD (Keane, Caddell, & Taylor, 1988), 4) Dissociative Experiences Scale (Bernstein & Putnam, 1986), 5) Locus of Control Scale (Rotter, 1975), and 6) Peritraumatic Dissociative Experiences Questionnaire-Self Report (Marmar, et al., 1994). They found that greater exposure to the traumatic critical incident was associated with higher levels of symptomatic distress, as was having a lower level of psychological adjustment. Likewise, experience on the job, locus of control, social support, and dissociative experiences were all

significantly related to most indices of symptomatic distress. Experience on the job and social support were negatively related to indices of symptomatic distress, while locus of control and dissociative experiences were positively related to these indices.

Another Interstate-880 study by Marmar et al. (1996) focused specifically on follow-up with the same experimental and control groups, exploring retrospective accounts of emergency service personnel's response at the time of the critical incident with regard to stress, somatic symptoms, occupational and social functioning. The researchers predicted that workers responding to the Interstate-880 disaster would retrospectively report greater critical incident exposure levels, dissociation, emotional distress, and perceived threat at the time of the incident, as well as greater levels of symptoms and social functioning disturbances at the time of assessment 1.5 years post-incident than did the controls. They also hypothesized that California Department of Transportation workers (Caltrans) who were not specifically trained in emergency services work, yet were central to the disaster relief effort, would report greater distress both at the time of incident and at assessment than police and fire personnel. They found that participation in the disaster and recovery operation was associated with greater immediate, but not long term distress when compared with control incidents. When comparing the four occupational groups and controlling for level of exposure, they found that Caltrans workers and the EMT/Paramedic groups

were associated with greater stress symptoms than police and fire groups. They inferred from this that firefighters and police officers may be more psychologically prepared for the exigencies of a natural disaster. Moreover, they found that workers who felt poorly prepared for the tasks presented to them during the disaster experienced more negative emotions (e.g., grief, helplessness, guilt) during the incident. Those who reported greater levels of depersonalization, derealization, and altered sense of time during the critical incident were more likely to be in greater distress approximately 1.5 to 4 years later.

The final follow-up study on the rescue workers from the Loma Prieta earthquake freeway collapse examined psychological health at a later time point, allowing for an examination of the longitudinal course of stress reactions in emergency responders. Self-report questionnaires examining incident exposure, peritraumatic dissociation and emotional distress, and current symptoms were administered 3 1/2 years after the incident. Two of the instruments were developed by the authors specifically for the purpose of conducting this study: The Incident Exposure Scale and the Peritraumatic Emotional Distress Scale. They also made use of the Peritraumatic Dissociative Experiences Questionnaire-Subject Version (Marmar, et al., 1994), the Impact of Event Scale-Revised (Zilberg, et al., 1982), the Mississippi Scale for Combat-Related PTSD (Keane, et al., 1988), the SCL-90 R (Derogatis, 1992) and the Social Adjustment Scale – Self Report (Weissman & Bothwell, 1976). The authors made a number of

predictions; a) that initial reports of emotional distress and peritraumatic dissociation at the time of the critical incident would still be reported at the same level 3.5 years after the incident; b) there would be a decrease in symptoms (e.g., Intrusion, Avoidance, and Hyperarousal) at 3.5 year follow-up point; c) those who reported moderate to high levels of distress in the original study would continue to report high symptom levels now; d) initial levels of traumatic exposure, adjustment, years of service, locus of control, and social support would be indicative of current levels of stress specific symptoms; and e) initial reports of dissociative tendencies and peritraumatic dissociation would be associated with current levels of distress. The results from this study supported a number of their predictions. First, emergency service personnel's recollections of their emotional distress during the incident remained stable over time. Second, there were modest improvements in intrusive and avoidant PTSD symptoms, as well as improved work and interpersonal functioning despite the persistence of hyperarousal symptoms. Third, those who initially reported higher levels of trauma-related distress continued to report higher levels of distress. Interestingly, rescue workers who responded to the freeway collapse did not exhibit more symptoms at follow-up than did the control workers with non-disaster related critical incidents. Finally, this study further confirmed a previous finding that peritraumatic dissociation at the time of incident, more than other indices such as exposure level

or social support, is most strongly associated with subsequent symptomatic distress.

Trauma Symptom Presentation Over Time

How recently a traumatic event took place appears to play a role in which trauma symptoms are present. The DSM-IV-TR (American Psychiatric Association, 2000) currently requires symptoms of PTSD be present for greater than one month duration in order for the diagnosis of PTSD to be applied. However, there is evidence that PTSD symptoms do not necessarily present immediately, nor do they persist indefinitely. Some research suggests that certain symptoms may oscillate back and forth with time (Solomon & Mikulincer, 2007). The DSM-IV-TR PTSD diagnosis has two subtypes indicating the length of symptom presentation. The *acute* subtype represents symptoms present for three months or less and the *chronic* subtype represents the presence of symptoms for greater than three months. The DSM-V has removed these two specifiers due to a lack of evidence supporting this distinction. Both the current and the upcoming edition of the DSM have *delayed onset* as a subtype. The PTSD subtype diagnosis of *delayed onset* addresses the fact that symptoms do not always appear right after the trauma, yet it implies that once symptoms appear they will do so in an all or nothing fashion. No diagnostic subtype addresses the issue of symptom oscillation.

A longitudinal study of firefighters involved in a serious bushfire in Australia revealed that delayed onset of symptoms was more common than immediate onset of symptoms (McFarlane, 1988). Other research conducted on combat veterans indicates that intrusive symptoms are dominant shortly after a traumatic event, but as time passes, avoidance becomes a more dominant response (Solomon & Mikulincer, 2007). Likewise, a meta-analysis found that after a traumatic event, anger gradually becomes a more dominant expression of PTSD symptoms (Orth & Wieland, 2006).

Taken together, this body of research suggests that there may be early and late phases of this disorder, in which certain symptoms of PTSD present early and other symptoms present late. This finding should have ramifications for how treatment is tailored to individuals seeking help at different points after their traumatic exposure. Here we propose to verify if in a First Responder population, symptomatic expression differs depending on the amount of time that has passed since the critical incident took place. The findings from the aforementioned studies will be replicated by examining the differences in scores on Anger, Intrusiveness, and Avoidance for program participants with recent and longer term critical incidents.

The Trauma Dose Effect

There is a modicum of research suggesting that exposure to increasing numbers of traumatic incidents results in greater trauma symptomology (Almqvist

& Brandell-Forsberg, 1997). This finding of a dose effect was born out of research done with refugee children and adolescents exposed to war. While there is also research suggesting that police officers and fire fighters are more likely to experience PTSD when exposed to more traumatic events (Carlier, et al., 1997), there is no evidence that emergency responders experience more symptoms as a result of exposure to an increasing number of traumatic incidents. Given that First Responders are trained to deal with extenuating circumstances that often involve trauma, they might respond differently than children or lay people. The findings from one study support this hypothesis (Marmar, et al., 1996). Workers who responded to a freeway collapse after the 1989 California earthquake had varying levels of symptoms, with police officers and firefighters showing the least symptoms and Caltrans workers exhibiting the most.

The Relationship Between Type of Event and Trauma Symptoms

Within trauma literature controversy exists regarding whether or not the type of trauma impacts the development of trauma symptoms. Some studies assert that there are hierarchies of traumatic events, with a personal life threat and witnessing someone being injured or killed regarded as some of the worst types of trauma which are most likely to result in a PTSD diagnosis (Ehntholt & Yule, 2006; Marmar, et al., 1999; McCaslin, et al., 2006; Ozer, et al., 2003). In contrast, finding a dead body is regarded as less severe and consequently less likely to be associated with a PTSD diagnosis. In opposition to this view are those that say

that the experience of trauma is a subjective one and therefore hierarchies of traumatic events are irrelevant (Carlier, et al., 1997; King, King, Bolton, Knight, & Vogt, 2008). For example, King et al (2008) found that perceived threat was the most potent predictor of negative health outcomes, even more powerful than combat experiences. Two different studies using police officers as the study population have yielded conflicting results on this topic (Carlier, et al., 1997; McCaslin, et al., 2006). To date, research has predominantly focused on the association between trauma severity and PTSD diagnosis. For the purposes of this dissertation the focus will shift to an examination of the association between trauma severity and severity of trauma symptoms.

Conclusion

This chapter described WCPR's integrative treatment approach and provided an overview of treatments that are incorporated into the program. It further outlined the current understanding of how trauma impacts the brain. Treatment outcome studies that closely match the proposed pre/post study design for this dissertation were reviewed with an eye for studies focusing on First Responder populations. Literature focusing on three aspects of traumatic incidents and their relevance to traumatic symptoms were also reviewed, namely, how recently the trauma occurred, the number of traumas experienced, and the type of trauma. This body of research, in combination with WCPR's clinical trauma assessment data, informed the proposed study design.

Chapter 3: Methods

Participants

This is a longitudinal study utilizing a pretest/posttest comparison group model design. One hundred and seventy-two (*N*=172) First Responders exposed to at least one critical incident (primary and secondary) were selected for this study. Each of these participants took part in WCPR's week-long treatment program between 2004 and 2009. Of these, 25 had TSI scores which were deemed invalid and were therefore excluded from subsequent analysis resulting in a study population total of 147. For the purpose of describing the population and analyzing data, the 25 respondents with invalid protocols were excluded, yielding a total sample size of 147.

Descriptive Statistics. The demographic data revealed a sample age range from 24 to 61, with a mean of 40.69 years. Table 1 indicates that the vast majority of the sample had the following characteristics: male gender (81.6%), Caucasian racial identity (80.3%), and were Police Officers by profession (69.4%). More than half of the sample received at least a High School diploma or GED (53.7%) and were married (59.2%). Nearly half (45.6%) of the participants identified as Protestant and a similar proportion (49%) were working when they participated in WCPR. WCPR clinicians diagnosed PTSD at a similar rate to that identified through the use of the DAPS assessment measure, 78.2% and 81.6%,

respectively. Almost the same number of clients were categorized as having clinical levels of substance use (33.3%) as having clinical levels of suicidality (34.7%). These descriptive statistics were useful in determining who the findings from this study can be extrapolated to represent and who the findings do not represent.

None of the clients selected for this study left the treatment program. Clients who did not take the TSI twice (*n*=5) were still included in the analysis through the use of a method which allows for their inclusion. A preliminary review of the data suggested that 14.5% (*n*=25) of TSI respondents had protocols that were deemed invalid on either the first or second administration. This level of invalid response was on par with that found in other traumatized populations such as combat veterans (20%) (Nye, Qualls, & Katzman, 2006). Nye et al. reported that the vast majority of combat veteran protocols were deemed invalid as a result of exceeding the cut off point for the ATR scale (Atypical Response). In this study, 24% of protocols were invalid due to the ATR scale and 60% were due to high scores on the RL scale (Response Level), indicative of a need to appear symptom free.

Table 1

Descriptive Statistics

Characteristic	%	*n*
Gender		
Male	81.6	120
Female	18.4	27
Race/Ethnicity		
Caucasian	80.3	118
Hispanic	9.5	14
African-American	3.4	5
Asian	3.4	5
Native American	2.0	3
None listed	1.4	2
Relationship Status		
Married	59.2	87
Divorced	16.3	24
Not married	13.6	20
Separated	4.1	6
Long-term	2.7	4
Widowed	2.0	3
Engaged	1.4	2
Data missing	0.7	1
Education Level		
High School diploma/GED	53.7	79
4 years of college	22.4	33
Associates degree	17.7	26
Graduate degree	5.4	8
Data missing	0.7	1
Spiritual Tradition		
Protestant	45.6	67
Catholic	27.2	40
None	17.7	26
Other	6.9	10
Data missing	2.7	4

Characteristic	%	*n*
Occupation		
Police Officer	69.4	102
Fire fighter	15.6	23
Military	3.4	5
Dispatcher	3.4	5
Other	8.3	12
Working Status		
Working	49	72
Not working	46.9	69
Data missing	4.1	6
Intake diagnosis		
PTSD	78.2	115
Other	11.6	17
Data missing	10.2	15
DAPS diagnosis		
PTSD	81.6	120
Other	17	25
Data missing	1.4	2
Substance use		
Sub-clinical level	66.7	98
Clinical level	33.3	49
Suicidality		
Subclinical level	65.3	96
Clinical level	34.7	51

Note. Occasionally percentages do not tally to 100% due to rounding.

Data Collection Tools and Instruments

Intake Interviews

The clinician administered phone intake interview (see Appendix A) and structured peer intake interview were used to collect demographic information

regarding the client's gender, race/ethnicity, marital status, profession, age, education level, faith tradition, working status, diagnosis, substance use, and suicidality level. Additional information was gathered regarding the length of time since the critical incident occurred and the type of incident in which the client was involved.

Trauma Symptom Inventory (TSI)

In this study the TSI was used to evaluate which symptoms changed as a result of the WCPR group treatment program and which did not change. This was done by evaluating the average levels of symptomatology at the outset of treatment and re-evaluating after a week of group therapy treatment. A full description of this instrument is found in Chapter 2.

Detailed Assessment of Posttraumatic Stress (DAPS)

The Detailed Assessment of Posttraumatic Stress (DAPS; Briere, 2001) is a 104-item, self-report measure used in the diagnosis of posttraumatic stress disorder (PTSD) and acute stress disorder (ASD). A full description of this instrument is found in Chapter 2.

For the purposes of the present study, the diagnosis designated by the DAPS was extracted, as was the number of traumatic experiences, how long ago the experience took place, a description of the trauma, and the data from the Substance Abuse Scale. The DAPS was not used to assess pre-post

symptomology because it is only administered once during the week-long treatment program.

Research Hypotheses

Hypothesis 1

The primary purpose of this study was to assess the efficacy of the WCPR clinical treatment program by examining the change in trauma symptoms after participation in the 6-day group intervention. This study sought to illuminate the basis for the anecdotal findings that this program works by evaluating the efficacy of treatment as measured by self-report on the TSI (Briere, 1995).

Significant change was predicted for all scales except those referring to sexual behavior (SC and DSB). Despite the fact that the program addresses sexual concerns, such as self-destructive sexual behavior and sexual dissatisfaction, there is little opportunity over the course of a weeklong residential treatment program to realize improvement in these areas. Whereas symptoms such as anxiety, anger, and flashbacks may lift, and be reflected on the self-report measure completed at the end of the week.

The Anxious Arousal (AA), Depression (D), and Defensive Avoidance (DA) scales were expected to show the most improvement due to specific ties they have to two key components of the program. Research on Eye Movement Desensitization Reprocessing (EMDR) suggests this treatment's relevance for treating anxiety and depression, while the desire to avoid negative memories

(Defensive Avoidance) is addressed through the debriefing process via exposure. The exposure component of the debriefing process was also likely to contribute to reducing anxiety symptoms (AA).

Hypothesis 2

The critical incident is a key focus of treatment in trauma therapy for First Responders. Here we attempted to identify factors related to the critical incident that impact recovery. There is a scarcity of research examining which specific characteristics or types of traumatic events may be related to trauma reactions in First Responders.

In this study the impact of the time elapsed since the critical incident was used to evaluate the level of symptomology as measured by the Anger/Irritability (AI), Intrusive Experiences (IE), and Defensive Avoidance (DA) TSI Subscales. The difference in pretest scores on these scales was compared between those with a recent critical incident and those with a longer term critical incident. It was hypothesized that Intrusiveness levels would be higher for First Responders whose traumatic incident occurred recently, while the Anger and Avoidance levels would be significantly higher for those whose incident occurred in the past.

Hypothesis 3

This study also examined whether the number of critical incidents experienced in life, ranging from 1 to 13 based on the existing data, correlated with extent of symptomology as measured by the TSI summary scales (TR, SLF,

DYS). Pretest scores on the summary scales were compared with cumulative exposure to traumatic events. It was hypothesized that First Responders would have a different symptomatic response to increasing numbers of critical incidents than has been found in the literature for lay people who experience the dose effect.

Hypothesis 4

Finally, this study examined if the type of critical incident (primary versus secondary) was associated with level of symptomology at the outset of the program as measured by the TSI summary scales (TR, SLF, DYS). Pretest scores on the summary scales were compared between those with primary and secondary critical incident exposure. It was hypothesized that those who experienced a personal injury or life threat (primary exposure) would have more symptomology than those who experienced a secondary exposure such as encountering a victim of a sexual assault or finding a dead body.

Procedures

Pre-intervention Screening

The WCPR clinical protocol was followed, during which all clients participated in a structured intake interview, and completed two standard trauma inventories (The Trauma Symptoms Inventory and the Detailed Assessment of Posttraumatic Stress).

Informed Consent and Human Subjects Committee Approval

Consent information was verbally reviewed in a group format where the potential use of the assessment measures for treatment and research purposes was delineated. Clients were assured that they would not be personally identified in any resulting publications and that they would receive feedback about their progress using these instruments. Their participation was requested and they signed the HIPAA Notice of Privacy and Practice that outlines the use of information for research purposes (see Appendix B). The Wright Institute also reviews all dissertation research to ensure that it is conducted in accordance with the ethical principles of the American Psychological Association. For the purposes of this study a proposal was submitted to the Wright Institute Committee for the Protection of Human Subjects (see Appendix C). Permission was granted to use the clinical data gathered in the course of treatment by WCPR for this research.

Intervention

Participants participated in the WCPR treatment protocol described in Chapter 2 or Appendix D.

Post-intervention Assessment

On the last full day of the program, clients completed the Trauma Symptoms Inventory for a second time in order to evaluate symptom change over the course of the week.

Chapter 4: Results

Data was culled from trauma assessment measures administered at WCPR's trauma treatment program in order to assess the hypotheses outlined in this study. During the defined four year (2005-2009) study period, 172 clients participated in the program. Of these, only five had missing Trauma Symptom Inventory (TSI) data. In these instances, either the pre or the post TSI data was missing. Additionally, 9 pretests and 16 posttests were deemed invalid based on scores exceeding the cut-off for one of the three validity scales. The pretests were largely invalid due to atypical response (66.7%) and the posttests were deemed invalid due to Response Level (RL) (93.8%). It is possible that high scores on the ATR scale represented accurate endorsement of a psychotic state, however they may instead have indicated a desire to present oneself as especially symptomatic. High RL scores suggest that the respondent is either defensive or has an oppositional test-taking posture. The 25 respondents with invalid protocols were excluded when analyzing the data, yielding a total sample size of 147.

Inferential Statistics

The Effect of Treatment on Trauma Symptoms

To assess the effect of treatment on trauma symptoms the difference between pre and posttest scores on the TSI clinical scales were compared.

Multilevel regression was used to estimate the change from time one to time two for the TSI subscales and summary scales (Hox, 2002), (Singer & Willett, 2003). Multilevel regression was employed using the xtmixed module in Stata/SE Release 11 (StataCorp, 2009). This method of analysis allowed all observations to be retained in the analysis, even if participant's scores were missing at one of the two measurement occasions. Missingness was assumed to be at random (McKnight, McKnight, Sidani, & Figueredo, 2007), (Schafer, 1997; Schafer & Graham, 2002) and estimation was carried out with full maximum likelihood employing the Expectation-Maximization (EM) algorithm to accommodate missing data. Random intercepts models were used because assessments were made at two times (pre and post treatment).

All TSI subscales and summary scales showed a significant decrease from time 1 to time 2 with multilevel regression models. Seven subscales were skewed to the right, so negative binomial models were used with the xtnegbin module to check the multilevel general linear model results to be sure they were not influenced by the skewness (Gardner, Mulvey, & Shaw, 1995; Hox, 2002). All were significant, and the difference in estimated means for the change from time 1 to time 2 were essentially the same. Therefore, the normal errors models (xtmixed analyses) were reported because they are likely to be more familiar to the reader.

A significant decrease in symptoms was predicted for all but two of the TSI subscales (Sexual Concerns and Dysfunctional Sexual Behavior). However, a

significant decrease was found for all 10 subscales, including these two. The largest decrease in scores was found for the following three subscales: Anger/Irritability (AI), Dissociation (DIS) and Anxious Arousal (AA) (see Table 1). The analysis of change for Anger/Irritability (AI) predicted a decrease of 18.0 points from time 1 to time 2 ($z = -18.15$, $p < 0.0005$). The analysis of change for Dissociation (DIS) predicted a decrease of 16.0 points from time 1 to time 2 ($z = -16.81$, $p < 0.0005$). Finally, the analysis of change for Anxious Arousal (AA) predicted a decrease of 14.3 points from time 1 to time 2 ($z = -18.94$, $p < 0.0005$). The least change was detected in the Dysfunctional Sexual Behavior (DSB), Sexual Concerns (SC) and Impaired Self Reference (ISR) Subscales. The analysis of change for Dysfunctional Sexual Behavior (DSB) predicted a decrease of 7.0 points from time 1 to time 2 ($z = -7.05$, $p < 0.0005$). The analysis of change for Sexual Concerns (SC) predicted a decrease of 7.4 points from time 1 to time 2 ($z = -8.73$, $p < 0.0005$), and the analysis of change for Impaired Self Reference predicted a decrease of 10.5 points from time 1 to time 2 ($z = -12.71$, $p < 0.0005$). A summary of these results and the remaining subscales is found in Table 2.

Table 2

Multilevel Regression Analysis

Scale	Cons.	Coef.	*z*	95% CI
Anger/irritability (AI)	62.4	-18.0*	-18.15	-19.9, -16.1
Dissociation (DIS)	66.3	-16.0*	-16.81	-17.9, -14.2
Anxious Arousal (AA)	64.3	-14.3*	-18.94	-15.6, -12.8
Depression (D)	62.3	-12.8*	-15.20	-14.5, -11.2
Intrusive experiences (IE)	68.2	-12.5*	-13.74	-14.2, -10.7
Tension Reduction Behavior (TRB)	58.4	-11.2*	-11.76	-13.0, -9.3
Defensive avoidance (DA)	63.8	-10.7*	-14.00	-12.2, -9.2
Impaired Self Reference (ISR)	60.7	-10.5*	-12.71	-12.1, -8.8
Sexual Concerns (SC)	53.9	-7.4*	-8.73	-9.0, -5.7
Dysfunctional Sexual Behavior (DSB)	53.5	-7.0*	-7.05	-9.0, -5.1

Note. Cons. = Constant; Coef. = Coefficient

*$p < .0005$

Impact of Time Elapsed on Trauma Symptomology

Multilevel regression was used to examine the association between the length of time since the critical incident took place and Anger/Irritability (AI), Intrusive Experiences (IE), and Defensive Avoidance (DA) at pretest. A conditional model was used to test these associations. Hypothesis #2 predicted that Intrusiveness levels would be higher for First Responders whose traumatic incident occurred recently, while the Anger and Avoidance levels would be

significantly higher for those whose incident occurred in the past. However, none of these predicted associations were found. Neither AI (z=0.91, p=.364), IE (z=-1.24, p=.214), nor DA (z=-1.46, p=.144) at pretest were associated with length of time since the critical incident.

Trauma Dose Effect

Multilevel regression was used to test the change in Trauma Summary Scale scores (TR, SLF, DYS) from pretest to posttest and to examine the association between Relative Traumatic Exposure (RTE) (e.g., number of traumatic incidents experienced) and the Summary Scale scores at pretest. Two models were estimated hierarchically to test these effects: an unconditional model to test the change in TR, SLF and DYS over time and a conditional model to test the change as well as the association of RTE to the Summary Scales at pretest. Although the Summary Scales were expected to show significant decreases from pretest to posttest, an association between the number of traumatic events experienced and symptomology at pretest was not expected (Hypothesis #3). As expected, the Summary Scales showed significant declines from pretest to posttest, however, the hypothesis that First Responders would have a different response to increasing numbers of trauma than lay people was not supported. There was a significant decrease of 13.7 points in reports on the TR summary scale from pre- to posttest (unconditional model z = -18.31, $p < .0005$). TR at pretest was associated with RTE, such that a report of one additional trauma

experience predicted an increase in the trauma scale of 0.69 points ($z = 3.16$, $p = .002$). There was also a significant decrease of 13.3 points in reports on the SLF summary scale from pre- to posttest (unconditional model $z = -16.83$, $p < .0005$). SLF at pretest was associated with RTE, such that a report of one additional trauma experience predicted an increase in the SLF scale of 0.62 points ($z = 3.10$, $p = .002$). The DYS summary scale showed a significant decrease of 17.0 points from pre- to posttest (unconditional model $z = -21.84$, $p < .0005$). DYS at pretest was also associated with RTE, such that a report of one additional trauma experience predicted an increase in the DYS scale of 0.53 points ($z = 2.60$, $p = .009$).

The Relationship Between Type of Event and Trauma Symptoms

Multilevel regression was used to examine the association between Type of Trauma Event (Primary or Secondary) and the Summary Scale scores at pretest. The type of incident was categorized as primary if it involved personal injury or life threat and secondary if it involved a situation such as encountering a dead body or a victim of sexual assault. Symptom level was measured by the TSI summary scales (TR, SLF, DYS). A conditional model was used to test the association of the Summary Scales at pretest. In contrast to what was predicted (Hypothesis #4) TR at pretest was not associated with type of trauma event (z=0.65, p=.518), nor was SLF (z=-1.14, p=.225) or DYS (z=-0.48, p=.633).

Chapter 5: Discussion

First Responders are repeatedly exposed to trauma due to the nature of their work, putting them at particular risk for experiencing a trauma response with negative sequelae. Despite First Responders' considerable exposure to traumatic events, there are few empirically validated programs effective at treating posttraumatic trauma in this population. The First Responder Network set out to address this unmet need and designed a week long treatment program referred to as the West Coast Post-trauma Retreat (WCPR). A longitudinal study with a pre-post design was used to explore the impact of participating in this program on trauma symptoms. In this study, the Trauma Symptom Inventory (TSI) was used to evaluate levels of symptomatology prior to entering group therapy and re-evaluated after six days of participation in treatment.

Most of the participants in this study who presented for treatment classified their occupation as either police officer (n=102, 69.4%) or fire fighter (n=23, 15.6%). The vast majority (n=115, 78.2%) were diagnosed with PTSD according to DSM-IV-TR criteria. Most of the study participants were men (n=120, 81.6%), reflective of the disproportionate number of men in the fields of policing and fire fighting, 91% and 98%, respectively (Crary, 2002; Price, 1996). A large percentage of the population was Caucasian (n=113, 80.3%), also reflective of the national figures for firefighters and police officers.

One of the most salient findings of this study is the overwhelming evidence suggesting the immediate reduction of symptoms in First Responders who participate in WCPR. In this study, participants' symptoms were significantly reduced on all ten TSI scales (see Table 2). This supports the study's primary hypothesis that trauma symptoms in First Responders are significantly reduced as a result of participation in WCPR. The Anxious Arousal (AA), Depression (D), and Defensive Avoidance (DA) scales were predicted to show the most improvement due to their relevance to core aspects of the program. EMDR is reported to be an effective treatment for anxiety and depression, while the exposure component of the debriefing process was expected to address avoidance as well as anxiety. As predicted, Anxious Arousal (AA) and Depression (D) showed among the largest reduction in symptoms, although the reduction in Anger/Irritability (AI) and Dissociation (DIS) symptomology was even greater. There was also a significant drop in Defensive Avoidance (DA) behaviors, though the reduction in symptoms was not among the highest. Trauma literature points to a clear link between exposure treatment and a reduction in avoidance symptoms. Therefore, because of the central relevance of the debriefing exposure treatment to the WCPR program, it was thought that DA would have among the highest reduction.

The Sexual Concerns (SC) and Dysfunctional Sexual Behavior (DSB) subscales were anticipated to show the least reduction in symptomology, due to

the lack of opportunity to recognize improvement in these areas over the course of the treatment program. This expectation was consistent with the findings. Another pre/post trauma intervention study which used the TSI assessment measure did not find a significant reduction in symptoms for three of the TSI Subscales (Wallis, 2002). Two of the three subscales for which there was no significant reduction were the SC subscale and the DSB subscale. This is noteworthy because participants in this study realized the least gain in these areas as well.

It is notable that this author could not find a single longitudinal study focused on trauma symptom reduction in a First Responder population. However, there are pre/post studies examining the role of treatment on non-First Responder populations that demonstrate substantial reductions in trauma symptoms (Bichescu, et al., 2007; Ovaert, et al., 2003; Russell, Silver, Rogers, & Darnell, 2007; Wallis, 2002). For example, when Narrative Exposure Therapy was used to treat victims of political torture, a significant reduction in avoidance and arousal symptoms, but not re-experiencing symptoms, was found at six months. Wallis et al. (2002) used group therapy to treat the trauma symptoms in adult survivors of child abuse. They found a reduction in symptoms on 7 of the 10 TSI scales (Anxious arousal, $p<.01$; Depression, $p<.001$; Anger/irritability, $p<.05$, Intrusive experiences, $p<.05$; Defensive avoidance, $p<.05$; Dissociation, $p<.05$; Trauma reduction behavior, $p<.05$) three months after the conclusion of treatment. Oavert, Cashel, and Sewell (2003) examined symptom reduction associated with

participation in a structured cognitive-behavioral therapy group for juvenile offenders with PTSD. After treatment, significant differences were observed on the Intrusion, $t(42) = 2.22$, $p<.05$, and Arousal subscales, $t(42) = 2.48$, $p<.05$, but not the Avoidance subscale. Additionally, areas of self-reported anxiety, anger and depression were examined, but these changes were not found to be statistically significant. Finally, one study (Russell, et al., 2007) which used EMDR as the treatment modality for combat veterans with trauma found significant reduction in symptoms based on a composite measure of intrusion, arousal, and avoidance symptoms from the Impact of Events Scale (Weiss & Marmar, 1997). They also found a reduction in depression symptoms using the Beck Depression Inventory (BDI).

It is difficult to directly compare the findings from the aforementioned studies to those presented here due to differences in length of time after treatment before symptoms were reanalyzed, the use of varying assessment measures, and differences in populations. Nonetheless, this First Responder study demonstrated significant reduction in symptoms in all three separate PTSD symptom domains (avoidance, arousal, and intrusion), as well as anger and depression. These findings were in accordance with the findings of two of the aforementioned studies (i.e. Wallis et al. and Russel et al.) . Thus, the WCPR treatment model is particularly effective in treating symptoms in multiple areas and appears comparable to trauma treatments used for other populations. The similarity of the

symptom change findings from the Russel et al. (2007) EMDR study to the ones reported here point to the importance of the EMDR component of the treatment model.

One commonality amongst all the studies was a reduction in arousal symptoms regardless of treatment approach or population. This change was consistent across studies regardless of the time point used for the posttreatment analysis. It may be that changes in arousal are immediate and more enduring than changes in the other two areas.

In addition to examining the change in trauma symptoms after completion of the WCPR program, this study sought to determine if initial symptom expression depends on how recently the trauma took place. Previous research focusing on combat veterans' symptom presentation indicates that intrusive symptoms are dominant shortly after a traumatic event, but over time, avoidance symptoms become the more dominant response (Solomon & Mikulincer, 2007). Additionally, a meta-analysis found that anger gradually becomes a more dominant expression of PTSD symptoms over time (Orth & Wieland, 2006). This study attempted to replicate these findings through the examination of TSI subscales representing each of these symptom clusters. It was hypothesized that Intrusive Experience (IE) levels would be higher for First Responders whose traumatic incident occurred recently, while Anger/Irritability (AI) levels and Defensive Avoidance (DA) levels would be significantly higher for those whose

incident occurred in the past. In contrast to these expectations, no associations were found between length of time since the critical incident and the three subscales (IE, AI, and DA). Thus, in this study the hypothesis that symptom expression would be associated with length of time since the critical incident took place was not supported.

This study differed in design from the Solomon & Mikulincer study that identified a difference in IE and DA. In the previous study, all participants were soldiers in the Lebanon War and suffered from combat stress reaction. Thus, they were exposed to the same experience at the same time. This study's population was exposed to a wide variety of incidents, none of which included war. Thus, findings suggesting an association between length of time since the incident and certain trauma symptoms may be specific to the repercussions of war trauma and not generalizable to other populations experiencing different types of trauma. Interestingly, Orth and Weiland (2006) found levels of anger-hostility increasing with time and also reported that the effect size was larger in samples with military war experience than other types of traumatic events. This lends additional support to the theory that the type of trauma may be related to the longitudinal presentation of symptomatology.

Age may be another factor contributing to differences between this study and the Solomon & Mikulincer study. The vast majority of subjects in that study were the same age when exposed to their trauma (mean age 25), while the

participants in this study ranged in age and tended to be older (mean age 40). Some researchers have suggested that there is an interplay between trauma and developmental stage, with increased levels of PTSD appearing shortly after the trauma, then decreasing while individuals are engaged in raising families and pursuing careers, then followed by an increase in symptoms during midlife and old age (Port, Engdahl, & Frazier, 2001). If this model holds true, given the age heterogeneity of this WCPR study sample, it would be unlikely to find a consistent change in symptoms over time.

Pretest scores on the TSI summary scales were compared with First Responder's cumulative exposure to traumatic events. There is some controversy in the literature regarding how the number and frequency of traumatic events to which First Responders are exposed relates to PTSD symptomology. In some studies, exposure to increasing numbers of duty related incidents was related to PTSD (Carlier, et al., 1997; Corneil, 1995), while in another study it was not (Corneil, Beaton, Murphy, Johnson, & Pike, 1999). Given that First Responders are trained to deal with extenuating circumstances that often involve trauma and have been reported to display fewer symptoms than other types of workers responding to an earthquake (Marmar, et al., 1996), it was hypothesized that they would respond differently than children or lay people to increasing numbers of traumatic events. In retrospect, this hypothesis was poorly formulated because it was generated as a null hypothesis (expecting no association between the number

of traumas and symptoms) rather than an alternative hypothesis. Recognition of this oversight was not made until the results were already generated so the hypothesis was not corrected. The findings from this study indicate the opposite from what was anticipated. First Responder's scores on the TR summary scale, the SLF summary scale, and the DIS summary scale all increased as the number of traumas reported increased . These results support earlier findings, where police officers and fire fighters were more likely to experience PTSD when exposed to more traumatic events (Carlier, et al., 1997; Corneil, 1995). However, this finding contradicts this study's hypothesis that First Responder's would have a different response to increasing numbers of traumatic events than non-First Responders. In actuality, First Responder's showed a similar response to that seen in children and lay people. They had more symptoms when exposed to a greater number of events.

The association between the type of critical incident and traumatic response is a second area in which the literature on First Responders is divided; some research suggests that the type of incident is associated with resulting level of symptomology (McCaslin, et al., 2006), while other research suggests the contrary. This study examined whether the type of critical incident cited as bothering the First Responder most was associated with level of symptomology at the outset of the program. It was hypothesized that First Responders experiencing a primary critical incident would have more trauma symptoms than a responder

who experienced a secondary incident. The results from this study showed no association between the TSI summary scales and either primary or secondary trauma. Therefore, this dissertation's hypothesis that primary trauma is associated with more symptoms than secondary trauma was not supported. However, these findings lend support to the theory that traumatic responses to critical incidents has more to do with the subjective meaning associated with the event than some externally rated variable associated with severity of the incident. Yet, the use of summary scales as indicators may have masked relationships between the type of critical incident and specific symptom areas. One study identified a relationship between hyperarousal symptoms as reported on the Impact of Event Scale – Revised (Weiss & Marmar, 1997) and critical incidents that involved personal life threat or duty related violence (McCaslin, et al., 2006). Therefore, were symptoms analyzed using the Anxious Arousal subscale rather than a summary scale, it is possible that an association could be detected.

Recommendations for Future Research

The present study calls to attention several directions for future research. A logical next step would extend the present study's line of inquiry by exploring the impact of additional time (6 months and 12 months posttreatment) on the gains made during the treatment program. This would help determine whether the reduction in symptoms observed during the week-long treatment program continues to persist over time. Other research has shown that with additional

longitudinal time points after the completion of treatment, there is continued improvement in symptom reduction, suggesting that it takes time for individuals to consolidate what they have learned during the treatment program and practice new skills.

WCPR's clinical treatment program is set up in a way which lends itself to conducting future research with a control group in order to make stronger inferences about the effects of treatment and control for history, maturation and pretesting effects. Because of the increasing demand by First Responders to attend this treatment program, there is always a waitlist. One possible quasi-experimental design would involve administering the TSI to members of the waitlist twice over the course of the week that the treatment program is taking place. This would allow differences to be attributed directly to the treatment and not to confounding variables such as other events occurring during the same week as treatment, the passage of time, or the effect of taking the test a second time.

With minimal expansion of the current database, an additional study creating a TSI norm for First Responders could be conducted. Like many psychological measures, the TSI is norm-based, meaning the score for an individual is interpreted by comparing his/her score with the scores of a group of people who define the norms for the test. Norms for this test were derived from a nationally representative sample of over 800 adults from the general population and over 3,500 Navy recruits. It is possible that the use of the TSI for First

Responders necessitates the use of norms specific to this population because the scales may not be long enough to accommodate the severity of symptoms experienced by this group, and the ceilings which indicate an invalid response level may be set too high. To conduct such a study, the raw scores from the TSI scales would need to be entered into the current database. Had a norm for First Responders been available for the present study, the number of participants that needed to be excluded due to invalid response levels might have been reduced.

WCPR clinicians are interested in understanding which aspects of their program are contributing most to positive client outcomes. To this end, it would be worth while to record clients' pre-EMDR and post-EMDR ratings of their Validity of Cognition (Shapiro, 2001) and SUDs (Wolpe, 1982) scores to see if there is an association between changes in these indices and changes on the more general trauma assessment measures. An association would be suggestive of a link between the EMDR treatment and the program's overall effectiveness.

Research on the contribution of organizational stress suggests that its role may be a more important contributing factor in the trauma response of First Responders than the critical incident itself. For example, researchers studying trauma responses in firefighters and paramedics found that those involved in the review process had significantly higher traumatic stress and depression symptoms than did those who were not involved in reviews (Regehr, et al., 2003). Media coverage was also found to be a contributing factor. However, social support

within the organization was identified as a mitigating factor of organizational stress (Burke, 1993; Buunk & Peeters, 1994). First Responders participating in WCPR currently provide information about their experience of organizational stress in the context of the group treatment program, but this information is not formally collected as data. Were it formally collected, WCPR could analyze the hypothesis that people experiencing organizational stress have greater distress than those who do not.

In terms of descriptive data, WCPR collects information on spiritual tradition. One study which examined the relationship between stress and religion chose to classify religiosity along four scales: participation in religious activities, belief in religious ideas, religious satisfaction, and influence on daily life (King & Hunt, 1975). Unfortunately, a question about spiritual tradition does not discern religiosity to this level. Spiritual tradition may suggest the First Responder's current religious affiliation, or may instead be a reflection of the religion to which he or she was exposed as a child. Making use of questions that ascertain the relevance of religion to a First Responder's current life circumstance would allow WCPR to better conceptualize how religion does or does not serve as a mediating factor in the development of stress.

WCPR is a thorough program that approaches trauma from multiple perspectives, paying close attention to the cognitive, somatic, and emotional experience. However, one area that could be bolstered is the examination of how

physiological and emotional states are connected. Research has shown the significant impact exercise can have on mood states, changing endorphin levels after relatively short periods of low impact activity (Brooks, et al., 1987). Depression and anxiety, both key issues for clients at WCPR are often ameliorated through physical activity (Manger & Motta, 2005). Clients may need assistance from the clinical program in integrating exercise into their lives as a practical aspect of self-care. Providing psychoeducation on the role of exercise on mental health as well as actual opportunities for clients to exercise regularly throughout the week would be useful. This modification in the current treatment program might serve to mitigate some of the stress associated with participation in the program itself, a rigorous and mentally demanding experience.

Conclusion

Over the past few years, WCPR collected data on First Responders who participated in their treatment program. They continue to create an ever growing database with every new retreat, and there are rich possibilities for the use of this data. One possibility is to use it to find out how well improvements in trauma symptoms, as demonstrated by the current study, are sustained over time. The data could also be used to explore the role of specific elements of the treatment program on trauma symptom reduction, and to revise the interpretive criteria of assessment instruments to better assess the population served.

Finally, this dissertation represents a piece of work indicating the success of WCPR's treatment modality for First Responders. Adding data resulting from this investigation into advertising materials (pamphlets and website) would build credibility for the program. These results may also be useful in securing funds through grants and reimbursement for services from insurance companies. Many First Responders are reluctant to engage in treatment, but now in addition to word of mouth recommendation, WCPR has concrete numbers to point to their ability to elicit positive change in individuals suffering from their involvement with traumatic events.

References

Almqvist, K., & Brandell-Forsberg, M. (1997). Refugee children in Sweden: Post-traumatic stress disorder in Iranian preschool children exposed to organized violence. *Child Abuse and Neglect 21*, 351-366.

American Psychiatric Association (2000). *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition, Text Revision ed.). Washington, DC: American Psychiatric Association.

Armstrong, K., O'Callahan, W., & Marmar, C. R. (1991). Debriefing Red Cross disaster personnel: The multiple stressor debriefing model. *Journal of Traumatic Stress, 4*(4), 581-593.

Bagby, R. M., Parker, J. D. A., & Taylor, G. J. (1994). The Twenty-Item Toronto Alexithymia Scale, I: Item selection and cross-validation of the factor structure. *J Psychosom Res, 38*, 23-32.

Bard, M., & Ellison, K. (1974). Crisis intervention and investigation of forcible rape. *The Police Chief, May,* 68-73.

Beck, A. (1976). *Cognitive therapy and the emotional disorders*. Madison, Conn: International Universities Press.

Beck, A., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4*, 561-571.

Beck, R. (2005). Unique aspects of group work with trauma. In B. Buchele & H. Spitz (Ed.), *Group Interventions for Treatment of Psychological Trauma*. New York, NY: American Group Psychotherapy Association, Inc.

Benner, A. (2000). Cop docs. *Psychology Today, 33*(6), 36-39.

Benson, H. (1975). *The relaxation response*. New York: William Morrow.

Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *Journal of Nervous and Mental Disease, 174*, 727-735.

Bichescu, D., Neuner, F., Schauer, M., & Elbert, T. (2007). Narrative exposure therapy for political imprisonment-related chronic posttraumatic stress disorder and depression. *Behaviour Research and Therapy 45*, 2212-2220.

Binder, E. B., Bradley, R. G., Liu, W., Epstein, M. P., Deveau, T. C., Mercer, K. B., et al. (2008). Association of FKBP5 polymorphisms and childhood abuse with risk of Posttraumatic Stres Disorder symptoms in adults. *JAMA, 299*(11), 1291-1305.

Bohl, N. (1991). *The effectiveness of brief psychological interventions in police officers after critical incidents*. Washington, DC: U.S. Department of Justice.

Bohl, N. (1995). Professionally administered critical incident debriefing for police officers. In M.I. Kurke & E. M. Scrivner (Eds.), *Police psychology into the 21st century* (pp. 169-188). Hillsdale, NJ: Erlbaum.

Boxer, P., & Wild, D. (1993). Psychological distress and alcohol use among fire fighters. *Scandinavian Journal of Environmental health, 19*, 121-125.

Brady, K. T., Killeen, T. K., Brewerton, T., & Lucerini, S. (2000). Comorbidity of psychiatric disorders and posttraumatic stress disorder. *Journal of Clinical Psychiatry, 61*(7), 22-32.

Bremner, J. D. (1999). Acute and chronic responses to psychological trauma: Where do we go from here? *American Journal of Psychiatry, 156*(3), 349-351.

Bremner, J. D., Randall, P., Scott, T. M., Bronen, R. A., Seibyl, J. P., & Southwick, S. M. (1995). MRI-based measurement of hippocampal volume in patients with combat-related posttraumatic stress disorder. *Ammerican Journal of Psychiatry, 152*, 973-981.

Brems, C., & Johnson, M. E. (1997). Clinical implications of the co-occurrence of substance use and other psychiatric disorders. *Professional Psychology: Research and Practice, 28*(5), 437-447.

Breuer, J., & Freud, S. (1974). *Studies on hysteria*. Harmondsworth, UK: Penguin.

Brick, J., & Pohereckky, L. A. (1983). Ethanol-stress interaction: Biochemical findings. *Psychopharmacology, 77*, 81-84.

Briere, J. (1995). *Professional manual for the Trauma Symptom Inventory*. Odessa, FL: Psychological Assessment Resources.

Briere, J. (2001). *Detailed Assessment of Posttraumatic Stress (DAPS) Professional Manual*: Psychological Assessment Resources, Inc.

Briere, J., Elliot, D. M., Harris, K., & Cotman, A. (1995). Trauma Symptom Inventory: Psychometrics and association with childhood and adult victimization in clinical samples. *Journal of Interpersonal Violence, 10*, 387-401.

Briere, J., Weathers, F. W., & Runtz, M. (2005). Is dissociation a multidimensional construct? Data from the multiscale dissociation inventory. *Journal of Traumatic Stress, 18*(3), 221-231.

Brooks, S., Burrin, J., Cheetham, M. E., Hall, G. M., Yeo, T., & Williams, C. (1987). The responses of the catecholamines and B-endorphin to brief maximal exercise in man. *Eruopean Journal of Applied Physiology and Occupational Physiology, 57*(2), 230-234.

Brown, J., & Campbell, E. (1990). Sources of occupational stress in the police. *Work and Stress, 4*, 305-318.

Burke, R. (1993). Work-family stress, conflict, coping, and burnout in police officers. *Stress Medicine, 9*, 171-180.

Buunk, A. P., & Peeters, M. (1994). Stress at work, social support and companionship: toward an event-contingent recording approach. *Work and Stress, 8*, 177-190.

Carlier, I. V. E., Lamberts, R. D., & Gersons, B. P. R. (1997). Risk factors for posttraumatic stress symptomatology in police officers: A prospective analysis. *The Journal of Nervous and Mental Disease, 185*(8), 498-506.

Carlier, I. V. E., van Uchelen, J. J., Lamberts, R. D., & Gersons, B. P. R. (1998). Disaster-related posttraumatic stress in police officers: A field study of the impact of debriefing. *Stress Medicine, 14*, 143-148.

Carlier, I. V. E., Voerman, A. E., & Gersons, B. P. R. (2000). The influence of occupational debriefing on post-traumatic stress symptomatology in traumatized police officers. *British Journal of Medical Psychology, 73*, 87-98.

Carlson, J., Chemtob, C. M., Rusnak, K., Hedlund, N. L., & Muraoka, M. Y. (1998). Eye movement desensitization and reprocessing (EMDR): Treatment for combat-related post-traumatic stress disorder. *Journal of Traumatic Stress, 11*, 3-24.

Carr, V., Levin, T., Kenardy, J., Webster, R., Hazell, P., Carter, G., et al. (1996). Psychosocial sequelae of the 1989 Newcastle earthquake: III. Role of vulnerability factors in post-disaster morbidity. *Psychological Medicine, 27*, 179-190.

Chemtob, C. M., Tolin, D. F., van der Kolk, B. A., & Pitman, R. K. (2000). Eye movement desensitization and reprocessing. In T.M. Keane & M. J. Friedman (Eds.), *Effective treatments for PTSD: Practice guidelines from*

the International Society for Traumatic Stress Studies (pp. 139-155, 333-335). New York: Guilford Press.

Chousos, G. P., & Gold, P. W. (1992). The concepts of stress and stress system disorders. Overview of physical and behavioral homeostasis. *JAMA, 267*, 1244-1252.

Coman, G., & Evans, B. (1991). Stressors facing Australian police in the 1990's. *Police Studies, 14*, 153-165.

Corcoran, K. A., & Maren, S. (2001). Hippocampal inactivation disrupts contextual retrieval of fear memory after extinction. *J. Neuroscience, 21*, 1720-1726.

Corneil, W. (1995). Traumatic Stress and organizational strain in the fire service. In L. Murphy, S. Sauter, G. Keita (Ed.), *Job Stress Interventions* (pp. 185-198). Washington, DC: American Psychological Association Press.

Corneil, W., Beaton, R. D., Murphy, S. A., Johnson, L. C., & Pike, K. (1999). Exposure to traumatic incidents and prevalence of posttraumatic stress symptomatology in urban fire fighters in two countries. *Journal of Occupational Health Psychology, 4*, 131-141.

Crary, D. (2002). All-male image burns firefighters, *SpokesmanReview*. Spokane, WA: Associated Press.

Cunningham, M. (2003). Impact of trauma on social work clinicians: Empirical findings. *Social Work Journal 48*, 451-458.

Davidson, J., Pearlstein, T., Londborg, P., Brady, K. T., Rothbaum, B., Bell, J., et al. (2003). Efficacy of Sertraline in preventing relapse of Posttraumatic Stress Disorder. *Focus, 1*, 273-281.

Davis, M., & Whalen, P. J. (2001). The amygdala: Vigilance and emotion. *Psychiatry, 6*, 13-34.

De Gaglia, J. (2006). Effect of small group crisis intervention (defusing) on negative affect and agreeableness to seeking mental health services. *Brief Treatment and Crisis Intervention, 6*(4), 308-315.

de Kloet, E. R., Joels, M., & Holsboer, F. (2005). Stress and the brain: From adaptation to disease. *Nature Reviews Neuroscience, 6*, 463-475.

Derogatis, L. R. (1983). *Administration, scoring, and procedures manual, II*. Towson, MD: Clinical Psychometric Research.

Derogatis, L. R. (1992). *SCL-90R administration, scoring & procedures manual - II*. Townson: Clinical Psychometric Research.

DiNunno, J. H. (2000). Long-term group psychotherapy for women who are survivors of childhood abuse. *Psychoanalytic Inquiry, 20*, 330-349.

Dolcos, F., LaBar, K. S., & Cabeza, R. (2004). Interaction between the amygdala and the medial temporal lobe memory system predicts better memory for emotional events. *Neuron, 42*, 855-863.

Duffy, J. (1979). The role of CMHC's in airport disasters. *Technical Assistance Center Report, 2*(1), 7-9.

Dyregrov, A., & Mitchell, J. (1992). Work with traumatized children: Psychological effects of coping strategies. *Journal of Traumatic Stress, 5*, 5-17.

Edmond, T., Rubin, A., & Wambach, K. (1999). The effectiveness of EMDR with adult female survivors of childhood sexual abuse. *Social Work Research, 23*, 103-116.

Ehntholt, K. A., & Yule, W. (2006). Practitioner Review: Assessment and treatment of refugee children and adolescents who have experienced war-related trauma. *Journal of Child Psychology and Psychiatry, 47*(12), 1197-1210.

Eichenbaum, H. (2000). A cortical-hippocampal system for declarative memory. *Nat. Rev. Neursci., 1*, 41-50.

Elhai, J. D., Gray, M. J., Kashdan, T. B., & Franklin, C. L. (2005). Which instruments are most commonly used to assess traumatic event exposure and posttraumatic effects?: A survey of traumatic stress professionals. *Journal of Traumatic Stress, 18*(5), 541-545.

Ellis, A., & Harper, R. A. (1975). *A new guide to rational living*. Hollywood: Prentice Hall.

Emmons, R. A., Colby, P. M., & Kaiser, H. A. (1998). When losses lead to gains: Personal goals and the recovery of meaning. In I. B. Weiner (Ed.),

Personality and clincial psychology series (pp. 163-178). Mahawah, NJ: Lawrence Erlbaum Associates, Inc.

Evans, B., & Coman, G. (1993). General versus specific measures of occupational stress: An Australian police survey. *Stress Medicine, 9*, 11-20.

Fay, J. (2009). Emergency responder exhaustion syndrome: Stress, coping and surviving in the emergency services. Unpublished Lecture. First Responder Support Network.

Fay, J., Kamena, M. D., Benner, A., Buscho, A., & Nagle, D. (2006). Emergency Responder Exhaustion Syndrome (ERES): A perspective on stress, coping and treatment in the emergency responder milieu. *Law Enforcement Executive Forum Journal, May*, 1-30.

Foa, E. B. (1995). *Post-traumatic Stress Diagnostic Scale (PDS)*. Minneapolis, MN: National Computer Systems.

Foa, E. B., & Kozac, M. J. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin, 99*, 20-35.

Foa, E. B., Riggs, D., Dancu, C., & Rothbaum, B. (1993). Reliability and validity of a brief instrument for assessing post-traumatic stress disorder. *Journal of Traumatic Stress, 6*, 459-474.

Foa, E. B., Riggs, D. S., & Gershuny, B. S. (1995). Arousal, numbing, and intrusion: Symptom structure of PSD following assault. *American Journal of Psychiatry, 152*, 116-122.

Foa, E. B., Rothbaum, B. O., Riggs, D. S., & Murdock, T. B. (1991). Treatment of posttraumatic stress disorder in rape victims: A comparison between cognitive-behavioral procedures and counseling. *Journal of Consulting and Clinical Psychology, 59*, 715-723.

Frederick, C. (1985). Selected foci in the spectrum of posttraumatic stress disorders. In J. Laube & S. Murphy (Eds.), *Perspectives on disaster recovery* (pp. 110-130). East Norwalk, CT: Appleton-Century-Crofts.

Gardner, W., Mulvey, E. P., & Shaw, E. C. (1995). Regression analyses of counts and rates: Poisson, overdispersed Poisson, and negative binomial models. *Psychological Bulletin, 118*(3), 392-404.

Gersons, B. P. R., & Carlier, I. V. E. (1992). Post-traumatic Stress Disorder: The history of a recent concept. *British Journal of Psychiatry, 161*, 742-748.

Glass, A. J. (1959). Psychological aspects of disaster. *Journal of the American Medical Association, 171*(2), 222-225.

Goldberg, D. P., & Hiller, V. F. (1979). A scaled version of the General Health Questionnaire. *Psychological Medicine, 1*, 139-145.

Hackett, D., & Violante, J. (2003). *Police suicide. Tactics for prevention*. Springfield, IL: Charles C. Thomas.

Hall, Z., & King, E. (1997). Group therapy within the NHS: Patient's views on the benefit of group therapy for women survivors of child sexual abuse. *Group Analysis, 30*, 409-427.

Harris, M. B., Baloglu, M., & Stacks, J. R. (2002). Mental health of trauma-exposed firefighters and critical incident stress debriefing. *Journal of Loss and Trauma, 7*, 223-238.

Heinrichs, M., Wagner, D., Schoch, W., Soravia, L. M., Hellhammer, D. H., & Ehlert, U. (2005). Predicting posttraumatic stress symptoms from pretraumatic risk factors: A 2-year prospective follow-up study in firefighters. *American Journal of Psychiatry, 162*, 2276-2286.

Herman, J. (1997). *Trauma and Recovery*. New York, New York: Basic Books.

Hokanson, M., & Bonnita, W. (2000). The critical incident stress debriefing process for Los Angeles county fire department: Automatic and effective. *International Journal of Emergency Mental Health, 2*(4), 249-257.

Horowitz, D. (2003, September, 14). Haven from the horrors. *Los Angeles Times*, from http://www.latimes.com

Hox, J. (2002). *Multilevel Analysis: Techniques and Applications.* Mahwah, NJ: Lawrence Erlbaum Associates.

Ironson, G. I., Freund, B., Strauss, J. L., & Williams, J. (2002). Comparison of two treatments for traumatic stress: A community-based study of EMDR and prolonged exposure. *Journal of Clinical Psychology, 58*, 113-128.

Irvin, J. E., Bowers, C. A., Dunn, M. E., & Wang, M. C. (1999). Efficacy of relapse prevention: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 67*(4), 563-570.

Jaberghader, N., Greenwald, R., Rubin, A., Dolatabadim, S., & Zand, S. O. (2004). A comparison of CBT and EMDR for sexually abused Iranian girls. *Clinical Psychology and Psychotherapy, 11*, 358-368.

Jehu, D. (1988). *Beyond sexual abuse*. London: Wiley.

Jerrard, J. (2008). Stress relief: Intensive program offers help for first responders suffering from post traumatic stress. *Law Officer Magazine,* 11-12.

Johnson, D. R., & Lubin, H. (2000). Group Psychotherapy for the Symptoms of Posttraumatic Stress Disorder. In Robert H. Klein & V. L. Schermer (Eds.), *Group Psychotherapy for Psychological Trauma*. New York, NY: The Guilford Press.

Jones, D. R. (1985). Secondary disaster victims: The emotional effects of recovering and identifying human remains. *The American Journal of Psychiatry, 142*, 303-307.

Kamena, M., & Fay, J. (2007). Treatment for first responders. *The California Psychologist, 40*(4), 16-17.

Keane, T. M., Caddell, J. M., & Taylor, K. L. (1988). Mississippi Scale for Combat-Related Posttraumatic Stress Disorder. *Journal of Consulting and Clinical Psychology, 56*, 35-90.

Keenan, P., & Royle, L. (2008). Vicarious trauma and first responders: A case study utilizing eye movement desensitization and reprocessing (EMDR) as

the primary treatment modality. *International Journal of Emergency Mental Health, 9*(4), 291-298.

Kilpatrick, D. G., Koenenm, K. C., Ruggiero, K. J., Acierno, R., Galea, s., Resnick, H. S., et al. (2007). The serotonin transporter genotype and social support and moderation of Posttraumatic Stress Disorder and Depression in hurricane-exposed adults. *Am J Psychiatry, 164*, 1693-1699.

King, L. A., King, D. W., Bolton, E. E., Knight, J. A., & Vogt, D. S. (2008). Risk factors for mental, physical, and functional health in Gulf War veterans. *Journal of Rehabilitation Research & Development, 45*(3), 395-408.

King, M. B., & Hunt, R. A. (1975). Measuring the religious variable: National replication. *Journal for the Scientific Study of Religion, 14*, 13-22.

Kirschman, E. (2004). *I love a fire fighter: What the family needs to know*. New York, NY: The Guildford Press.

Kirschman, E. (2007). *I love a cop: What police families need to know*. New York, New York: The Guilford Press.

Kosten, T. R., & Krystal, J. H. (1988). *Biological mechanisms in post traumatic stress disorder: Relevance for substance abuse*: American Medical Society on Alcoholism.

Kovacs, M. (1992). *Children's Depression Inventory manual*. Toronto, Ontarior, Canada: MultiHealth Systems.

Krampen, G. (1991). *Inventory of Competence and Control Beliefs*. Gottingen, Germany.

Kulka, R. A., Schlenger, W. E., Fairbank, J. A., Hough, R. L., Jordon, B. K., Marmar, C. R., et al. (1990). *Trauma and the Vietnam War generation: Report of findings from the National Vietnam Veterans Readjustment Study*. New York: Brunner/Mazel.

Lang, P. J., Ohmann, A., & Vaitl, D. (1988). The International Affective Picture System. Gainseville: University of Florida.

Lanius, R. A., Bluhm, R., Lanius, U., & Pain, C. (2006). A review of neuroimaging studies in PTSD: Heterogeneity of reponse to symptom provocation. *Journal of Psychiatric Research, 40*, 709-729.

Lavie, P. (2001). Sleep disturbances in the wake of traumatic events. *New England Journal of Medicine, 345*(25), 1825-1832.

Lazarus, R., & Folkman, S. (1984). *Stress, Apraisal and Coping*. New York: Springer Publishing Company.

Le Doux, J. E. (2000). Emotion circuits in the brain. *Annual Review of Neuroscience, 23*, 155-184.

Lee, C., Gavriel, H., Drummond, P., Richards, J., & Greenwald, R. (2002). Treatment of post-traumatic stress disorder: A comparison of stress inoculation training with prolonged exposure and eye movement

desensitization and reprocessing. *Journal of Clinical Psychology, 58*, 1071-1089.

Leonard, R., & Alison, L. (1999). Critical incident stress debriefing and its effects on coping strategies and anger in a sample of Australian police officers involved in shooting incidents. *Work and Stress, 13*, 144-161.

Levenson, L., & Dwyer, A. (2003). Peer support in law enforcement: Past, present and future. *International Journal of Emergency Mental Health, 5*(3), 147-152.

Levin, P., Lazrove, S., & Van der Kolk, B. (1999). What psychological testing and neuroimaging tell us about the treatment of posttraumatic stress disorder by eye movement desensitization and reprocessing. *Journal of Anxiety Disorders, 13*(1-2), 159-172.

Lindauer, R. J. L., Booij, J., Habraken, J. B. A., Uylings, H. B. M., Olff, M., Carlier, I. V. E., et al. (2004). Cerebral blood flow changes during script-driven imagery in police officers with posttraumatic stress disorder. *Biological Psychiatry, 56*, 853-861.

Lindauer, R. J. L., Vlieger, E., Jalink, M., Olff, M., Carlier, I. V. E., Majoie, C. B. L. M., et al. (2004). Smaller hippocampal volume in Dutch police officers with posttraumatic stress disorder. *Biological Psychiatry, 56*, 356-363.

Lindy, J. D., & Grace, M. (1985). The recovery environment: Continuing stressor versus a healing psychosocial space. In B. J. Sowder (Ed.), *Disasters and*

Mental Health: Selected Contemporary Perspectives (Vol. DHHS Publication No. ADM 85-1421, pp. 137-149). Rockville, MD: NIMH.

Longstreth, G. F., Mason, C., Schreiber, I. G., & Tsao-Wei, D. (1998). Group psychotherapy for women molested in childhood: Psychological and somatic symptoms and medical visits. *International Journal of Group Psychotherapy, 48*, 533-541.

Lynch, M., Littleton, J., McKernan, R. M., Durcan, M. J., McMillan, T., & Campbell, I. C. (1983). Alpha adrenoceptor number and function in rat cortex after ethanol and immobilization stress. *Brain Research, 288*, 145-159.

Malcom, A. S., Seaton, J., Perera, A., Sheehan, D. C., & Van Hasselt, V. B. (2005). Critical incident stress debriefing and law enforcement: An evaluative review. *Brief treatment and crisis intervention, 5*(3), 261-278.

Manger, T. A., & Motta, R. W. (2005). The impact of an exercise program on posttraumatic stress disorder, anxiety, and depression. *International Journal of Emergency Mental Health, 7*(1), 49-57.

Marcus, S., Marquis, P., & Sakai, C. (1997). Controlled study of treatment of PTSD using EMDR in an HMO setting. *Psychotherapy, 34*, 307-315.

Marcus, S., Marquis, P., & Sakai, C. (2004). Three- and 6-month follow-up of EMDR treatment of PTSD in an HMO setting. *International of Stress Management, 11*, 195-208.

Marlatt, G. A., & Gordon, J. R. (Eds.). (1985). *Relapse prevention: Maintenance strategies in the treatment of addictive behaviors*. New York: Guilford Press.

Marmar, C. R., Weiss, D. S., Metzler, T. J., Delucchi, K. L., Best, S. R., & Wentworth, K. A. (1999). Longitudinal course and predictors of continuing distress following critical incident exposure in emergency services personnel. *The Journal of Nervous and Mental Disease, 187*(1), 15-22.

Marmar, C. R., Weiss, D. S., Metzler, T. J., Ronfeldt, H. M., & Foreman, C. (1996). Stress responses of emergency services personnel to the Loma Prieta earthquake interstate 880 freeway collapse and control traumatic incidents. *Journal of Traumatic Stress, 9*(1), 63-85.

Marmar, C. R., Weiss, D. S., Schlenger, W. E., Fairbank, J. A., Jordan, B. K., Kulka, R. A., et al. (1994). Peritraumatic dissociation and post-traumatic stress in male Vietnam theater veterans. *American Journal of Psychiatry, 151*, 902-907.

Martenyi, F., Brown, E. B., Zhang, H., Koke, S. C., & Prakash, A. (2002). Fluoxetine v. placebo in prevention of relapse in post-traumatic stress disorder. *The British Journal of Psychiatry, 181*, 315-320.

McCammon, S., Durham, T., Allison, E., & Williamson, J. (1988). Emergency workers cognitive appraisal and coping with traumatic events. *Journal of Traumatic Stress, 1*, 353-372.

McCann, L. I., & Pearlman, L. A. (1990). Vicarious traumatization: A framework for understanding the psychological effects of working with victims. *Journal of Traumatic Stress, 3*, 131-149.

McCaslin, S. E., Rogers, C. E., Metzler, T. J., Best, S. R., Weiss, D. S., Fagan, J. A., et al. (2006). The impact of personal threat on police officer's responses to critical incident stressors. *J Nerv Ment Dis, 194*, 591-597.

McDevitt-Murphy, M. E., Weathers, F. W., & Adkins, J. W. (2005). The use of the Trauma Symptom Inventory in the assessment of PTSD symptoms. *Journal of Traumatic Stress, 18*(1), 63-67.

McFarlane, A. C. (1988). The longitudinal course of post-traumatic stress disorders following a natural disaster. *Journal of Nervous and Mental Disease, 176*, 22-29.

McFarlane, A. C. (1998). Epidemiological evidence about the relationship between PTSD and alcohol abuse: the nature of the association. *Addictive Behaviors, 23*, 813-825.

McKnight, P. E., McKnight, K. M., Sidani, S., & Figueredo, A. J. (2007). *Missing Data: A Gentle Introduction*. New York, NY: Guilford Press.

Milad, M. R., & Quirk, G. J. (2002). Neurons in medial prefrontal cortex signal memory for fear extinction. *Nature, 420*, 70-74.

Mitchell, J. (1986a). Critical incident stress management. *Response!, September/October,* 24-25.

Mitchell, J. (1986b). Living dangerously: Why some firefighters take risks on the job. *Firehouse, 11*(8), 50-51.

Mitchell, J., & Bray, G. (1990). *Emergency services stress: Guidelines for preserving the health and careers of emergency services personnel*. Englewood Cliffs, N.J.: Prentice-Hall.

Mitchell, J., & Everly, G. (1997). *Critical incident stress debriefing: An operational manual for CISD defusing and other group crisis intervention services*. Maryland: Chevron Publishing Corporation.

Moran, C. C. (1998). Individual differences and debriefing effectiveness. *The Australian Journal of Disaster and Trauma Studies, 1*.

Moran, C. C., & Colless, E. (1995). Perception of worker stress in Australian firefighters. *Work and Stress, 9*, 405-415.

Morgan, A. (2000). *What is Narrative Therapy*. Adelaide, South Australia: Dulwich Centre Publications.

Mueser, K. T., Noordsy, D. L., Drake, R. E., & Fox, L. (2003). Basics. *Integrated treatment for dual disorders: A guide to effective practice* (pp. 3-34). New York: Guilford Press.

National Institute of Mental Health (1985). *Role of stressors and supports for emergency workers*. Rockville, MD: Department of Health and Human Services.

Neuner, F., Schauer, M., Klaschik, C., Karunakara, U., & Elbert, T. (2004). A comparison of Narrative Exposure Therapy, Supportive Counseling, and Psychoeducation for Treating Posttraumatic Stress Disorder in an African Refugee Settlement. *Journal of Consulting and Clinical Psychology, 72*(4), 579-587.

Norris, F. H., & Hamblen, J. L. (2004). Standardized self-report measures of civilian trauma and PTSD. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma* (Second Edition ed.). New York, New York: The Guilford Press.

Nye, E. C., Qualls, C., & Katzman, J. (2006). The Trauma Symptom Inventory: Factors associated with invalid profiles in a sample of combat Veterans with Post-Traumatic Stress Disorder. *Military Medicine, 171*(9), 857-860.

Oldham, J. M., Riba, M. B., & Tasman, A. (Eds.). (1993). *American Psychiatric Press Review of Psychiatry* (Vol. 12). Washington, DC: American Psychiatric Press.

Olff, M., Langeland, W., & Gersons, B. P. R. (2005). The psychobiology of PTSD: Coping with trauma. *Psychoneuroendocrinology, 30*, 974-982.

Orr, S. P., Metzger, L. J., & Lasko, N. B. (2000). De novo conditioning in trauma-exposed individuals with and without posttraumatic stress disorder. *Journal of abnormal Psychology, 109*, 290-298.

Orth, U., & Wieland, E. (2006). Anger, Hostility, and Posttraumatic Stress Disorder in Trauma-Exposed Adults: A Meta-Analysis. *Journal of Consulting and Clinical Psychology, 74*(4), 698-706.

Ovaert, L. B., Cashel, M. L., & Sewell, K. W. (2003). Structured group therapy for Posttraumatic Stress Disorder in incarcerated male juveniles. *American Journal of Orthopsychiatry, 73*(3), 294-301.

Ozer, E. J., Best, S. R., Lipsey, T. L., & Weiss, D. S. (2003). Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychol. Bull., 129*, 52-73.

Paton, D. (1994). Disaster relief work: An assessment of training effectiveness. *Journal of Traumatic Stress, 7*, 275-288.

Paton, D., Violanti, J., & Schmuckler, E. (1999). Chronic exposure to risk and trauma: Addiction and separation issues in police officers. . In J. Violanti & D. Paton (Eds.), *Police trauma: Psychological aftermath of civilian combat* (pp. 37-53). Springfield, IL: Charles C. Thomas.

Perkins, B. R., & Rouanzoin, C. C. (2002). A critical evaluation of current views regarding eye movement desensitization and reprocessing (EMDR):

Clarifying points of confusion. *Journal of Clinical Psychology, 58*(1), 77-97.

Pitman, R. K. (2001). Hippocampal diminution in PTSD: More (or less?) than meets the eye. *Hippocampus, 11*, 73-74.

Port, L. C., Engdahl, B., & Frazier, P. (2001). A longitudinal and retrospective study of PTSD among older prisoners of war. *American Journal of Psychiatry, 158*, 1474-1479.

Power, K. G., McGoldrick, T., Brown, K., & al., e. (2002). A controlled comparison of eye movement desensitization and reprocessing versus exposure plus cognitive restructuring, versus waiting list in the treatment of post-traumatic stress disorder. *Journal of Clinical Psychology and Psychotherapy, 9*, 299-318.

Price, B. R. (1996). Female Police Officers in the United States. In M. Pagon (Ed.), *Policing in Central and Eastern Europe: Comparing Firsthand Knowledge with Experience from the West*. Ljubljana, Slovenia: College of Police and Security Studies.

Progrebin, M. R., & Poole, E. D. (1991). Police and tragic events: The management of emotions. *Journal of Criminal Justice, 19*, 395-403.

Rabe, S., Beauducel, A., Zollner, T., Maercker, A., & Karl, A. (2006). Regional brain electrical activity in posttraumatic stress disorder after motor vehicle accident. *Journal of Abnormal Psychology, 115*(4), 687-698.

Regehr, C., Johanis, D., Dimitropoulos, G., Bartram, C., & Hope, G. (2003). The police officer and the public inquiry: A qualitative inquiry into the aftermath of workplace trauma. *Brief Treatment and Crisis Intervention, 3*(4), 383-396.

Richards, D. (2001). A field study of critical incident stress debriefing versus critical incident stress management. *Journal of Mental Health, 10*(3), 351-362.

Roberts, A. R., Everly, G. S., & Camasso, M. J. (2005). *Meta-analysis of 36 crisis intervention studies: Plenary address*. Paper presented at the 8th World Congress on Stress, Trauma, and Coping.

Robins, L. N., Wing, J., Wittchen, H. U., & Helzer, J. E. (1988). The Composite International Diagnostic Interview: An epidemiologic instrument suitable for use in conjunction with different diagnostic systems and in different cultures. *Archives of General Psychiatry, 45*(12), 1069-1077.

Robinson, R. (1989). Psychological debriefing: A review of psychological debriefings conducted by the Melbourne critical incident stress debriefing team. *Ambulance World* 23-31.

Robinson, R., & Mitchell, J. (1993). Evaluations psychological debriefings. *Journal of Traumatic Stress, 6*, 367-382.

Rothbaum, B. O., Astin, M. C., & Marsteller, F. (2005). Prolonged exposure versus eye movement desensitization (EMDR) for PTSD rape victims. *Journal of Traumatic Stress, 18*, 607-616.

Rothbaum, B. O., Kozak, M. J., & Foa, E. B. (2001). Posttraumatic stress disorder in rape victims: Autonomic habituation to auditory stimuli. *Journal of Traumatic Stress, 14*, 283-293.

Rotter, J. B. (1975). Some problems and misconceptions related to the construct of internal versus external control of reinforcement. *Journal of Consulting and Clinical Psychology, 43*, 56-67.

Rudofossi, D. (2007). *Working with traumatized police officer-patients - A clinician's guide to Complex PTSD Syndromes in Public Safety Professionals*. Amityville: Baywood Publishing Company, Inc.

Russell, M. C., Silver, S. M., Rogers, S., & Darnell, J. N. (2007). Responding to an identified need: a joint department of defense/department of veterans affairs training program in eye movement desensitization and reprocessing (EMDR) for clinicians providing trauma services. *International Journal of Stress Management, 14*(1), 61-71.

Saigh, P. A. (1989). The development and validation of the Children's Posttraumatic Stress Disorder Inventory. *International Journal of Special Education, 4*, 75-84.

Schafer, J. L. (1997). *Analysis of Incomplete Multivariate Data*. Boca Raton, FL: Chapman & Hall/CRC.

Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7*(2), 147-177.

Scheck, M., Schaeffer, J. A., & Gillette, C. (1998). Brief psychological intervention with traumatized young women: The efficacy of eye movement desensitization and reprocessing. *Journal of Traumatic Stress 11*, 25-44.

Schnurr, P. P., Friedman, M. J., Foy, D. W., Shea, M. T., Hsieh, F. Y., Lavori, P. W., et al. (2003). Randomized trial of trauma-focused group therapy for posttraumatic stress disorder: Results from a department of veterans affairs cooperative study. *Archives of General Psychiatry, 60*(5), 481-489.

Shapiro, F. (2001). *Eye movement desensitization and reprocessing: basic principles, protocols, and procedures* (2nd ed.). New York: Guilford Press.

Shapiro, F. (2007). EMDR, adaptive information processing, and case conceptualization. *Journal of EMDR Practice and Research, 1*(2), 68-87.

Shea, M. T., McDevitt-Murphy, M., Ready, D. J., & Schnurr, P. P. (2009). Group Therapy. In Edna B. Foa, Terence M. Keane, Matthew J. Friedman & J. A. Cohen (Eds.), *Effective Treatment for PTSD: Practice Guidelines from the*

International Society for Traumatic Stress Studies (2nd Edition ed.). New York, NY: The Guilford Press.

Shepherd, M., & Hodgkinson, P. E. (2006). The hidden victims of disaster: Helper stress. *Stress Medicine, 6*(1), 29-35.

Shin, L. M., Rauch, S. L., & Pitman, R. K. (2006). Amygdala, Medial Prefrontal Cortex, and Hippocampal function in PTSD. *Annals New York Academy of Sciences, 1071*, 67-79.

Singer, J. D., & Willett, J. B. (2003). *Applied Longitudinal Data Analysis: Modeling Change and Event Occurrence.* New York: Oxford University Press.

Smyth, L. (1999). *Overcoming Post-Traumatic Stress Disorder*. Oakland, CA: New Harbinger Publications.

Solomon, E. P., & Heide, K. M. (2005). The biology of trauma: Implications for treatment. *Journal of Interpersonal Violence, 20*(1), 51-60.

Solomon, Z., & Mikulincer, M. (2007). Posttraumatic intrusion, avoidance, and social functioning: A 20-year longitudinal study. *Journal of Consulting and Clinical Psychology, 75*(2), 316-324.

Southwick, S. M., Krystal, J. H., Morga, C. A., Johnson, D., Nagy, L. M., Nicolaou, A., et al. (1993). Abnormal noradrenergic function in posttraumatic stress disorder. *Archives of General Psychiatry, 504*(4), 266-274.

Spielberger, C. (1991). *State-Trait Anger Expression Inventory*. Odessa, FL: Psychological Assessment Resources.

Spielberger, C., Gorsuch, R., Lushene, R., Vagg, P., & Jacobs, G. (1983). *Manual for the State-Trait Anxiety Inventory (self-evaluation questionnaire)*. Palo Alto, CA: Mind Garden.

Spielberger, C., Goruch, R. L., & Lushene, R. D. (1970). *STAI Manual*. Palo Alto, California: Consulting Psychologists Press.

Spitzer, W. J. (1988). The invisible toll on rescue workers. *Washington Post Health,* pp. 13-16,

Spitzer, W. J., & Neely, K. (1992). Critical incident stress: The role of hospital-based social work in developing a statewide intervention system for first-responders delivering emergency services. *Social Work in Health Care, 18*(1), 39-58.

StataCorp (2009). Stata Statistical Software: Release 11. College Station, TX: StataCorp LP.

Taylor, S. (1989). *Positive Illusions*. New York: Basic Books.

Taylor, S., Thordarson, D. S., Maxfield, L., Fedoroff, I. C., Lorell, K., & Orgodnuczuk, J. (2003). Comparitive efficacy, speed, and adverse effects of three PTSD treatments: Exposure therapy, EMDR, and relaxation training. *Journal of Consulting and Clinical Psychology, 71*, 330-338.

Tedeschi, R. G., & Calhoun, L. G. (1996). The posttraumatic growth inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress, 9*, 455-471.

Temple, D. (1991). Psychological support to ambulance service, Victoria. *Response, September*, 26-27.

The New York Times Company Foundation The New York Times 9/11 Neediest Fund Twelve-Month Report. *Trauma Treatment Initiatives*. Retrieved from http://www.nytco.com/company/foundation/neediest/trauma_b.html

Trice, H. M. (1958). Alcoholics Anonymous. *The Annals of the American Academy of Political and Social Science, 315*(1), 108-116.

Ulman, K. H. (2004). *Module 1: Group interventions for treatment of trauma in adults*: American Group Psychotherapy Association.

Ussery, W. J., & Waters, J. A. (2006). COP-2-COP Hotlines: Programs to address the needs of first responders and their families. *Brief Treatment and Crisis Intervention*, 6

van der Kolk, B., Spinazzola, J., Blaustein, M., Hopper, E., Korn, D., & Simpson, W. (2007). A randomized clinical trial of EMDR, fluoxetine and pill placebo in the treatment of PTSD: Treatment effects and long-term maintenance. *Journal of Clinical Psychiatry, 68*, 37-46.

Vaughan, K., Armstrong, M. F., Gold, R., O'Conner, N., Jenneke, W., & Tarrier, N. (1994). A trial of eye movement desensitization compared to image

habituation training and applied muscle relaxation in post-traumatic stress disorder. *Journal of Behavior Therapy & Experimental Psychiatry, 25*, 283-291.

Wachtel, P. L. (1980). Transference, schema, and assmilation: the relevance of Piaget to the psychoanalytic theory of transference. *Annual of Psychoanalysis, 8*, 59-76.

Wallis, D. A. N. (2002). Reduction of trauma symptoms following group therapy. *Australian and New Zealand Journal of Psychiatry, 36*, 67-74.

Waters, J., Roberts, A. R., & Morgen, K. (1997). High Risk Pregnancies: Teenagers, poverty, and drug abuse. *The Journal of Drug Abuse, 27*(3), 541-562.

Wedding, D. (1987). Substance abuse in the Vietnam Veteran. *American Association of Occupational Health Nurses, 35*, 74-76.

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

Weiss, D. S., Marmar, C. R., Metzler, T. J., & Ronfeldt, H. M. (1995). Predicting symptomatic distress in emergency services personnel. *Journal of Consulting and Clinical Psychology, 63*(3), 361-368.

Weissman, M. M., & Bothwell, S. (1976). Assessment of social adjustment by patient self-report. *Archives of General Psychiatry, 33*, 1111-1115.

Werner, H., Bates, G., Bell, R., Murdoch, P., & Robinson, R. (1993). Critical incident stress in Victoria State Emergency Service volunteers. *Australian Psychologist, 27*, 159-165.

West Coast Post-trauma Retreat (2009). In the news, from http://www.wcpr2001.org/news/haven.htm

White, E. K., & Honig, A. L. (1995). Law enforcement famililes. In M.I. Kurke & E. M. Scrivner (Eds.), *Police psychology in the 21st century* (pp. 189-206). Hillsdale, NJ: Erlbaum.

Wolpe, J. (1982). *The practice of behavior therapy*. New York: Pergamon Press.

Yalom, I. D., & Leszcz, M. (2005). The selection of clients. *The theory and practice of group psychotherapy* (pp. 231-258). New York, New York: Basic Books.

Zilberg, N. J., Weiss, D. S., & Horowitz, M. J. (1982). Impact of Event Scale: A cross-validation study and some empirical evidence supporting a conceptual model of stress response syndromes. *Journal of Consulting and Clinical Psychology, 50*, 407-414.

Zung, W. W. K. (1965). A self-rating depression scale. *Arch Gen Psychiatry, 12*, 63-70.

Appendix A

Phone Intake Interview

Appendix B

WCPR HIPAA Notice of Privacy Practices

Appendix C

Human Subjects Protocol

Appendix D

Retreat Schedule

Day 1 – Sunday	Staff Meeting Greeting & Introduction of staff and residents Review client workbook, schedule, and consent to treatment Dinner Complete Trauma Symptom Inventory (TSI) EMDR Resource Installation Peer to Peer Interviews
Day 2 – Monday	Optional Meeting with Chaplain Breakfast Emergency Responder Exhaustion Syndrome – Education Complete DAPS Measure List Critical Incidents Lunch Intake Interview Introduction to CISM debriefing process Dinner Debriefing – Fact Phase
Day 3 –	Breakfast

Tuesday	Rescue Personalities – Education Debriefing – Thought Phase Lunch Video – Officer Gilmartin's Traumatic Response to Incident Debriefing – Reaction Phase Dinner Psychophysiology of Stress – Education
Day 4 – Wednesday	Sleep Hygiene – Education Debriefing – Continued Lunch Debriefing – Symptom Phase Alcohol Education EMDR Discussion Dinner First Responder's 12 Step Meeting
Day 5 – Thursday	Breakfast Debriefing – Relationships & Family Issues Lunch Family Systems – Education EMDR Session

	The Use of Medication for Treating Trauma – Education Dinner Complete Posttraumatic Growth Inventory 90 Day Discharge Plan Relapse Prevention Education Group
Day 6 – Friday	Breakfast Complete Trauma Symptom Inventory Graduation Ceremony and Symbolic Letting Go Activity

Note. EMDR=Eye Movement Desensitization and Reprocessing, DAPS=Detailed Assessment of Posttraumatic Stress, CISM=Critical Incident Stress Management