Chapter 13
Trauma Management Therapy for First Responders

Madeline Marks
University of Central Florida, USA

Annelise Cunningham
University of Central Florida, USA

Clint Bowers
University of Central Florida, USA

Deborah Beidel
University of Central Florida, USA

ABSTRACT

Mental health professionals are only recently beginning to understand the risks for stress-related disorders experienced by first responders. For example, it is clear that first responders are at increased risk for Post-Traumatic Stress Disorder. Unfortunately, clinicians currently have a limited repertoire with which to treat these disorders. Treatments for PTSD have been developed for use with military patients, for the most part. It is not clear that these treatments are appropriate, and effective, for first responders. In this chapter, the authors describe a pilot study designed to evaluate whether one specific treatment approach creates similar clinical outcomes for first responders as have been observed for a military sample. The results indicate that clinical outcomes for first responders were nearly identical as those obtained with military personnel. The results are discussed in terms of future directions for research in this area.

INTRODUCTION AND BACKGROUND

First responders risk their lives to protect the community and this profession is considered to be one of the most dangerous and stressful occupations in the United States (Del Ben, Scotti, Chen, & Fortson, 2006; U.S. Department of Labor, 2007). Society has long recognized the physical demands of first responders; however, what is less formally acknowledged are the negative psychological outcomes. The Oklahoma

City Bombing and the September 11, 2001 terrorist attack on the World Trade Center (WTC) were the two earliest large-scale critical incidents that illuminated the numerous negative mental health consequences experienced by first responders (Corrigan et al., 2009; North et al., 2002). More recent studies have identified comparable mental health consequences to those of large-scale critical incidents among first responders with exposure to more routinely encountered potentially traumatic events (PTEs) (see Johnson, 2010; Paulus, Vujanovic, Schuhmann, Smith, & Tran, 2017; Stanley, Boffa, Hom, Kimbrel, & Joiner, 2017).

Most notable among these negative mental health consequences is posttraumatic stress disorder (PTSD). The hallmark of a PTSD diagnosis is that symptoms result from exposure to a traumatic event. Traumatic events are those that include exposure to actual or threatened death, serious injury, or sexual violence (American Psychiatric Association, 2013). First responders encounter these traumatic events repeatedly with high frequency as a function of their daily job requirements (Hartley, Violanti, Sarkisian, Andrew, & Burchfiel, 2013; Marmar et al., 2006). Documented prevalence rates for Posttraumatic Stress Disorder (PTSD) among United States police officers range from 6.2% to 15% (Hartley et al., 2013; Pietrzak et al., 2012), and from 6.3% to 22% (Bernard, Driscoll, Kitt, West, & Tak, 2006; DeLorme, 2014) among United States firefighters. Although varied, most studies observe PTSD rates in excess of the general population (6.8%, Kessler et al., 2005) and observe PTSD rates similar to the prevalence rate observed in OEF/OIF veterans (12%, Hoge, Riviere, Wilk, Herrell, & Weathers, 2014). It is estimated that there are at minimum 250,000 first responders in need of treatment for PTSD (Haugen, Evces, & Weiss, 2012); however, there is little scientific literature to guide clinicians in the selection of an effective treatment for PTSD in these patients.

Given the comparable rates of PTSD among first responders and OEF/OIF veterans, the treatment literature on PTSD and veterans may help guide clinicians' clinical practice. Both intensive outpatient programs (IOP) and traditional outpatient programs (OP) have been effective in the treatment of PTSD for veterans (Beidel, Frueh, Neer, Bowers, et al., 2019; Beidel, Frueh, Neer, & Lejuez, 2017). Among veterans that participated in one IOP, the relapse (1%) and dropout (2%) rates for the program were lower than other PTSD treatments and RCTs. In addition to the improved relapse and dropout rates, treatment effects were large ($d = 2.06$). Of the 100 participants that completed treatment, 65.9% no longer met DSM-IV-TR criteria for PTSD, 72% experienced clinically significant symptom improvement, and 94.6% met the VA designated benchmark for symptom improvement. Among veterans that participated in the OP, the relapse (4.5%) and dropout (26%) rates for the exposure portion of the program were compatible with other PTSD treatments and RCTs. Treatment effects were large ($d = 2.06$). Of the 49 participants that completed treatment across groups, 65.9% no longer met DSM-IV-TR criteria for PTSD, 42% experienced clinically significant symptom improvement, and 94.6% met the VA designated benchmark for symptom improvement.

Given these promising outcomes among veterans, the models employed by Beidel, Frueh, Neer, Bowers, et al. (2019) and Beidel, Frueh, Neer, and Lejuez (2017) are worth investigating among a group of treatment seeking first responders. However, it remains unclear if extrapolating treatment practices from the empirical literature with veterans will translate well to other populations, including first responders. It is unclear if similar success can be achieved. There are two specific points that merit consideration. First, unlike active duty personnel who can attend treatment by assignment to a temporary duty status (TDY), no such formal mechanism is in place for first responders. In order to take advantage of an IOP, first responders would need to utilize workman's compensation, personal sick time, vacation time, or Family Medical Leave Act (FMLA). Traditional outpatient therapy is also a challenge when working with

first responders. Different from their military counterparts, many first responders work a shift schedule of 24-hours on-duty followed by 48-hours off-duty; therefore, clinicians require flexibility to capitalize on off-duty availability for scheduling purposes.

Second, the extant literature (see Lang & McTeague, 2011) reports concerns about the feasibility of exposure therapy for individuals with a history of multiple exposures to trauma. Several researchers argue that there may be differences in neurophysiological reactivity among individuals with exposure to multiple traumatic events in comparison to single-discrete traumatic events (Diamond, Lipsitz, Fajerman, & Rozenblat, 2010; Eagle & Kaminer, 2013; Kaminer, Eagle, & Crawford-Browne, 2016; Nuttman-Shwartz & Shoval-Zuckerman, 2016). Previous research (Cuthbert et al., 2003; D'Andrea, Pole, DePierro, Freed, & Wallace, 2013; Hagenaars, Stins, & Roelofs, 2012; Lang & McTeague, 2011; McTeague et al., 2010) identified a dulled level of reactivity among individuals with exposure to multiple traumatic events, which may be beneficial for coping with recurrent and chronic stress. This decreased reactivity may work in assistance with coping; however, it may also disrupt the effectiveness of exposure therapy. Specifically, weakened emotional reactivity may decrease the ability to repair the disrupted fear-extinction mechanisms at work in individuals with PTSD.

To our knowledge, this study is the first to evaluate the efficacy and feasibility of Trauma Management Therapy for PTSD among first responders. We examined its efficacy through retrospective record review of first responders treated for occupational-related PTSD from December 2016 to August 2018. PTSD symptoms, as measured by the Clinician Administered PTSD Scale for DSM-5 (CAPS-5) and the PTSD Checklist for DSM-5 (PCL-5) were assessed at pre and post-treatment

METHODS

Participants

Participants (n=29) were firefighter/emergency medical service personnel (FF/EMS; hereafter termed as FF) and law enforcement officers (LEO). All had sought treatment at the University of Central Florida RESTORES Clinic in Orlando, Florida for negative emotional reactions/behaviors related to traumatic events. All patients gave informed consent for treatment. Data were deidentified and amalgamated for this report. Information was obtained from medical records with respect to diagnosis, age, gender, type of responder, scores on the PCL-5 and the CAPS-5 at the beginning and end of treatment. Of the total participants, 48.6% qualified for a single diagnosis of posttraumatic stress disorder (PTSD), whereas 51.4% had comorbid diagnoses in addition to PTSD (e.g., Alcohol Use Disorder (AUD), Major Depressive Disorder (MDD), Generalized Anxiety Disorder (GAD, amongst other DSM-5 mental disorders). Therapists were licensed clinical psychologists or advanced clinical psychology doctoral students who received didactic training in the theory and implementation of all treatment components. See Table 1 for further descriptive information regarding the sample.

Table 1. Demographic Information

		n	**%**
Relationship Status	Married	12	50.0
	Separated	5	20.8
	Divorced	2	8.3
	Single	5	20.8
Occupation	Firefighter/EMS	21	72.4
	Law Enforcement	8	27.6
Gender	Female	3	10.3
	Male	26	89.7
Age		**M**	**SD**
Years of Service		41.0	8.27

Assessment

Clinician-Administered PTSD Scale for DSM-5 (CAPS-5)

The CAPS-5 (CAPS-5; Weathers et al., 2017) is a clinician-administered diagnostic interview used to assess PTSD diagnosis and symptom severity. The CAPS-5 consists of 30 items that assess the 20 DSM-5 diagnostic criteria for PTSD. Each item is scored for symptom severity (scale 0 = "absent" to 4 = "extreme/incapacitating"). A total score is calculated by summing the items that reflect the DSM-5 PTSD criteria. Individual severity scores are calculated by summing the corresponding cluster items. At least one re-experiencing symptom (Criterion B), one avoidance symptom (Criterion C), two negative alterations in cognitions and mood symptoms (Criterion D), and two hyperarousal symptoms (Criterion E) must be rated as "moderate/threshold" (score of 2 on the scale of 0 to 4) or higher to meet DSM-5 PTSD diagnostic criteria. Further, symptoms must have persisted for greater than one month (Criterion F), and clinically significant distress or impairment (Criterion F) is present. The CAPS-5 was administered at pre and post-treatment.

PTSD Checklist (PCL-5)

The PCL-5 (Weathers et al., 2013) is a 20-item self-report measure that corresponds with the 20 symptoms listed in the DSM-5. The PCL-5 is scored by calculating a total severity score (range = 0 - 80) by summing all items. Cluster scores can also be calculated by summing the items within a cluster (Cluster B, items 1-5; Cluster C, items 6-7; Cluster D, items 8-14; Cluster E, items 15-20). Items are rated from 0 "not at all" to 4 "extremely." The PCL-5 was administered at pre and post-treatment.

Trauma Management Therapy is a multi-component behavioral treatment program that combines individual imaginal and in vivo exposure therapy (to address the primary symptoms of PTSD) and a group therapy component that addresses other behaviors that often are present when PTSD exists. The group treatment includes anger management training, behavioral activation for depression, social reintegration,

and sleep hygiene training. We deliver the treatment in one of two formats. In our traditional outpatient program, imaginal exposure is delivered first, followed by in vivo exposure, followed by the group treatment. This is a total of 29 treatment sessions delivered over a 16-17-week time period, distributed as follows. Following a psychoeducation session, exposure sessions (typically 14 sessions total) occur two to three times per week. This is followed by group therapy, which occurs once weekly (12 sessions).

In our innovative Intensive Outpatient Program (IOP), we deliver the 29 treatment sessions over a 3-week period. Three sessions per day are delivered (imaginal exposure, in vivo exposure, and group treatment), Monday through Friday for three weeks. Both formats have been demonstrated to be highly effective. Additionally, data from the 17-week program demonstrate the specificity of the individual components – when delivered separately, the group treatment does not result in further significant decreases in CAPS or PCL scores, indicating that change in primary PTSD symptoms occurs as a result of exposure therapy (Beidel, Frueh, Uhde, Wong, & Mentrikoski, 2011; Beidel et al., 2019).

In this pilot study, 31% of the first responders received exposure therapy only, whereas 69% of the first responders participated in the three-week IOP. Because these different components work on different parts of the PTSD syndrome, we can examine the efficacy of exposure therapy for PTSD in first responders, regardless of the specific treatment delivery format.

With respect to the specifics of the exposure therapy delivery, the first session involves a collaborative effort between the clinician and the patient to construct an imaginal exposure scene, based on the specific trauma. Each patient's trauma scene is unique, and includes attention to the sights, sounds, and smells that were present during the traumatic event as well as attention to how the patient was behaving, thinking, and feeling. Below is an example of an imaginal scene:

*You are called out for a motor vehicle accident. You are coming to the scene through afternoon traffic via the highway. There are cars everywhere, fi ret rucks, ambulances, traffic stopped, one car is on its side, debris everywhere, people everywhere. You begin to smell the smell of death (use actual smells of coolant/ oil/ transmission/battery acid, if available). You are thinking "Okay, what's my first move, I cannot let these people die.**"** You announce to the scene commander, "medic 161 on scene requesting assignment." He replies, "Pickup truck, passenger seat would be your patient." You start to sweat, and your throat tightens. You are wondering what you will find when you arrive at the pick-up truck. Will you be able to save this person?*

You grab the stretcher, which has the heart monitors and jump bag. Your partner grabs the seat collar and backboard. You go to the truck and announce yourself, " Hey, my name is Rick, I'm paramedic, where are you hurting?" He's a kid – he can't be more than 12 years old. You see his eyes move and do not get any other response. You immediately see that he is severely injured. You see cuts around his head, a large laceration across his neck. You pull him out of the truck, lay him on the backboard. He starts bleeding out. Your heart is racing, you are sweating, your throat is tight. You are thinking – damn, what's happening? I am not going to lose this kid. This kid is not going to die.

You yell to your partner "I need the airway bag. I've got to intubate him." You do the intubation, put him on the stretcher and get him into the back of the truck. You get in the back with him. "Code 3" (*siren sounds*) *to the hospital. You do a secondary assessment. You think "He's just a kid. I can't lose him. He hasn't even had a chance to be a teenager." You get on the radio and say, "Approximately 12 year old boy, motor vehicle accident, severe trauma to neck, obvious trachea and esophagus laceration,*

working a trauma code." You arrive at hospital and get out of the truck. You see people everywhere as you wheel him to trauma room. You say to the physician, "he was sitting in seat, he was conscious, he had eye movement, I moved him, he bled out. I reassessed the lacerations, found trachea severed." The physician looks at you with a puzzled expression. You feel your stomach do a flip. What did you miss? Why is she looking at you like that? You assist others lifting him to the hospital bed. The physician grabs his chin and lifts up. You see the kid is cut ear from ear, almost reaching his spine. The physician says, "There is nothing we can do" and pronounces him dead. You exit the room. You start thinking "what did I miss?" "what did I do wrong?" "I was too late…too late to help this kid." You start to cry, you see the nursing staff crying. The physician starts talking to you. She says, "you did all you can do." You think to yourself, "yeah, but I didn't save him. I'm supposed to save them." You feel helpless, your stomach is in a know as you think about your own kids.

What is important for clinicians to note about this scene is that it is not just a description of events. It included drawing the patient's attention to his emotions, thoughts and physiological responses. Introducing the actual sounds and smells into the scene increases the likelihood of immersion into the scene. Furthermore, as these sights and sounds now may serve as cues (sometimes called triggers) that may elicit responses such as anxiety, flashbacks, or nightmares. Through the process of exposure, these cues will lose their ability to elicit these responses, thereby extinguishing the fear. For more information about the rationale behind exposure therapy and the specifics of implementation, the reader is referred to Beidel, Frueh, Neer, and Lejuez, (2017).

Beginning with session 2, patients engaged in imaginal exposure therapy using the individualized exposure scene. Prior to beginning the session, the therapist asked the patient to estimate their baseline level of arousal using a 9 point (0-8) subjective units of distress scale (SUDS). As the scenario was presented, the patient should experience an increase in anxiety. As the patient continued to imagine the scene, anxiety peaked and subsequently decreased. The exposure continued until within-session habituation (WSH) was achieved. WSH was indicated by a minimum 50% reduction from highest reported SUDS level during that session and the clinician's behavioral observations. Imaginal exposure was conducted for up to 14 sessions and was terminated after evidence of between-session habituation (BSH). BSH was indicated by the absence of SUDS increase following imaginal scene exposure.

RESULTS

Differences Among First Responder Type

Independent sample t-tests were conducted to assess for differences in PTSD symptom severity by first responder type (e.g., FF vs. LEO; see Figures 1 and 2 for pre-treatment scores). No group differences were found on the CAPS-5 ($t = 0.25$, df $= 11.97$ $p = .81$) or PCL-5 (t $= 1.37$, df $= 21.51$, $p = .18$).

Changes in PTSD Symptoms

CAPS-5

To examine changes on the CAPS from pre to post-treatment a paired samples t-test was used and the results revealed a statistically significant decrease in CAPS score (t = 11.13, df = 19, p < 0.001), resulting in a large effect size (d = 2.49), similar to the previous effect sizes identified by Beidel, Frueh, Neer, Bowers, et al. (2017) and Beidel, Frueh, Neer, and Lejuez (2017). See Figure 1.
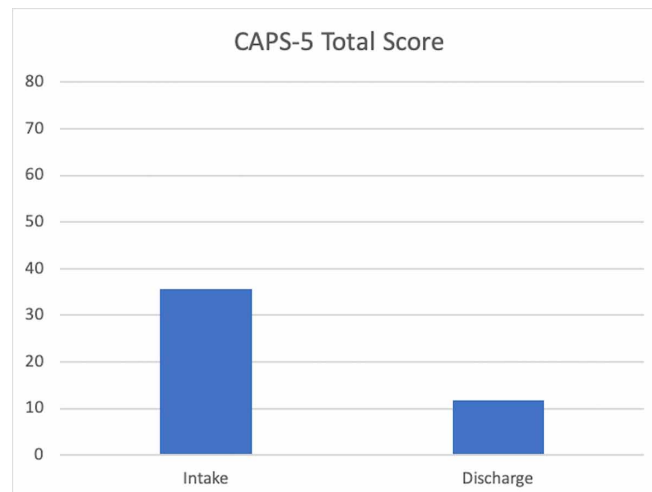
PCL-5

Changes on the PCL scores from pre to post-treatment were also examined. Results of the paired samples t-test revealed a statistically significant decrease in PCL scores ($t = 14.55$, df $= 25$, $p < 0.001$), resulting in a large effect size (d = 2.85) similar to the previous effect sizes identified by Beidel, Frueh, Neer, Bowers, et al. (2017) and Beidel, Frueh, Neer, and Lejuez (2017). See Figure 2.

DISCUSSION

With minimum estimates as high as 250,000, first responders need PTSD treatment, in the United States. Responding to their need for evidenced-based treatment for PTSD is immediate and necessary (Haugen, Evces, & Weiss, 2012). Despite the points of consideration offered by the authors of the present study that PTSD treatment with first responders may not be feasible, the findings of the current study give no such indication. The present study highlights that the IOP and OP treatment models used with veterans (Beidel, Frueh, Neer, Bowers, et al., 2017; Beidel, Frueh, Neer, & Lejuez, 2017) also are effective treatments for PTSD among first responders. At post-treatment, first responders demonstrated significant decreases from pre- to post-treatment in clinician rated (CAPS-5) and self-reported (PCL-5) symptoms

Figure 1. Pre-treatment and Post-treatment CAPS-5 scores

Figure 2. Pre-treatment and Post-treatment PCL-5 scores
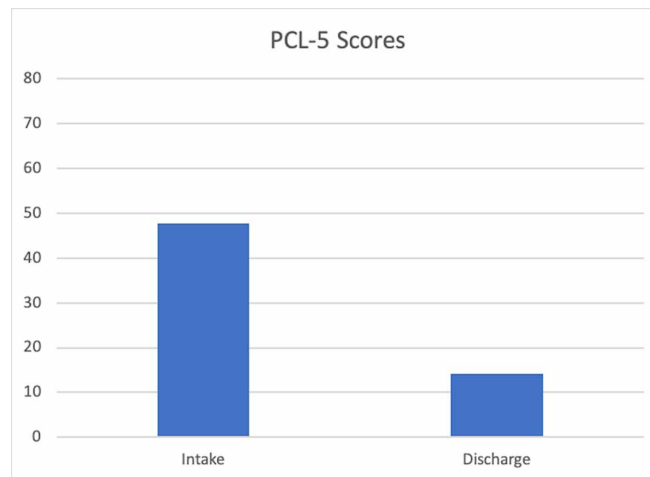
of PTSD. The results demonstrate that exposure therapy is a feasible treatment for PTSD among first responders; therefore, clinicians that work with first responders should consider the use of exposure therapy for treatment of PTSD symptoms.

With regard to scheduling, the first responders in this study maintained attendance at a minimum of two sessions per week, although most participants were able to participate in the IOP three week intensive treatment program. The decrease in reported symptoms highlight the viability of treatment gains within the context scheduling barriers for first responders. A cornerstone of effective treatment is consistent attendance (Reardon, Cukrowicz, Reeves, & Joiner, 2010). The rotating shift schedule of first responders may appear as a deterrent for clinicians to choose exposure therapy. While clinicians working with first responders should be cognizant of their rotating shift schedule it should not deter clinicians from choosing exposure therapy as a treatment modality. The present study was able to work around scheduling barriers to obtain commitment to treatment attendance.

FUTURE RESEARCH DIRECTIONS

The findings raise an interesting point of consideration with regard to the development of PTSD. The hallmark predisposition to the development of PTSD requires exposure to or witness of a life-threatening event (National Center for PTSD, 2018). First responders present as a unique population in that, while employed, they continuously experience or are witnesses to such events. Thus, the risk for maintaining or increasing symptoms of PTSD while continuing to work during a course of treatment could potentially be high. This study demonstrates that exposure therapy serves as an effective treatment modality for first responders, even in the face of continuous exposure to criterion A events. That is, even though first responders remained active in their employment, engaging in exposure therapy simultaneously resulted in a decrease in symptoms reported on the CAPS-5 and PCL-5. The authors originally posed the point of consideration of the impact of exposure to multiple traumas and the potential for weakened emotional reactivity and subsequent decreased ability to repair the disrupted fear-extinction mechanisms involved in PTSD. The results of the present study serve as preliminary evidence against this concern

for treatment disruption; however, additional resources should be dedicated to further elucidating the relationship between exposure to multiple traumas, emotional reactivity, and effectiveness of exposure therapy. Future research must focus on the development of treatment recommendations (e.g., session length, number of sessions) specific to first responders. This should include the examination of therapy process variables (i.e., between- and within-session habituation) and differences in response to treatment between first responder occupations.

CONCLUSION

Ultimately, large-scale multi-site randomized controlled trials will be needed to for translating research data into clinical practice. The present findings serve as a foundation to the development of a standard of care for first responders suffering from PTSD. Exposure therapy resulted in the successful and significant reduction of PTSD symptoms in first responders on both the CAPS-5 and PCL-5. Provision of services to this unique and underserved population should include exposure therapy

ACKNOWLEDGMENT

REFERENCES

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Washington, DC: Author.

Beidel, D. C., Frueh, B. C., Neer, S. M., Bowers, S. M., Bowers, C. A., Trachik, B., ... Grubaugh, A. (2019). Trauma Management Therapy with virtual-reality augmented exposure therapy for combat-related PTSD: A randomized controlled trial. *Journal of Anxiety Disorders*, *61*, 64–74. doi:10.1016/j.janxdis.2017.08.005 PMID:28865911

Beidel, D. C., Frueh, B. C., Uhde, T. W., Wong, N., & Mentrikoski, J. (2011). Multicomponent behavioral treatment for chronic combat-related posttraumatic stress disorder: A randomized controlled trial. *Journal of Anxiety Disorders*, *25*(2), 224–231. doi:10.1016/j.janxdis.2010.09.006 PMID:20951543

Beidel, D. C., Frueh, C. B., Neer, S. M., & Lejuez, C. W. (2017). The efficacy of Trauma Management Therapy: A controlled pilot investigation of a three-week intensive outpatient program for combat-related PTSD. *Journal of Anxiety Disorders*, *50*(May), 23–32. doi:10.1016/j.janxdis.2017.05.001 PMID:28545005

Bernard, B., Driscoll, R., Kitt, M., West, C., & Tak, S. (2006). Health hazard evaluation of police officers and firefighters after hurricane Katrina - New Orleans, Louisiana, October 17-28 and November 30 - December 5, 2005. *Morbidity and Mortality Weekly Report*, *55*(16), 456–458. PMID:16645571

Corrigan, M., McWilliams, R., Kelly, K. J., Niles, J., Cammarata, C., Jones, K., ... Prezant, D. J. (2009). A computerized, self-administered questionnaire to evaluate posttraumatic stress among firefighters after the World Trade Center collapse. *American Journal of Public Health*, *99*(S3Suppl 3), 702–709. doi:10.2105/AJPH.2008.151605 PMID:19890176

Cuthbert, B. N., Lang, P. J., Strauss, C., Drobes, D., Patrick, C. J., & Bradley, M. M. (2003). The psychophysiology of anxiety disorder: Fear memory imagery. *Psychophysiology*, *40*(3), 407–422. doi:10.1111/1469-8986.00043 PMID:12946114

D'Andrea, W., Pole, N., DePierro, J., Freed, S., & Wallace, D. B. (2013). Heterogeneity of defensive responses after exposure to trauma: Blunted autonomic reactivity in response to startling sounds. *International Journal of Psychophysiology*, *90*(1), 80–89. doi:10.1016/j.ijpsycho.2013.07.008 PMID:23896169

Del Ben, K. S., Scotti, J. R., Chen, Y.-C., & Fortson, B. L. (2006). Prevalence of posttraumatic stress disorder symptoms in firefighters. *Work and Stress*, *20*, 37–48. doi:10.1080/02678370600679512

DeLorme, J. (2014). *The investigation of repeated trauma exposure and psychological adjustment in Firefighters*. California School of Professional Psychology, Alliant International University.

Diamond, G. M., Lipsitz, J. D., Fajerman, Z., & Rozenblat, O. (2010). Ongoing Traumatic Stress Response (OTSR) in Sderot, Israel. *Professional Psychology, Research and Practice*, *41*(1), 19–25. doi:10.1037/a0017098

Eagle, G., & Kaminer, D. (2013). Continuous traumatic stress: Expanding the lexicon of traumatic stress. *Peace and Conflict*, *19*(2), 85–99. doi:10.1037/a0032485

Hagenaars, M. A., Stins, J. F., & Roelofs, K. (2012). Aversive life events enhance human freezing responses. *Journal of Experimental Psychology. General*, *141*(1), 98–105. doi:10.1037/a0024211 PMID:21767043

Hartley, T. A., Violanti, J. M., Sarkisian, K., Andrew, M. E., & Burchfiel, C. M. (2013). PTSD symptoms among police officers: Associations with frequency, recency, and types of traumatic events. *International Journal of Emergency Mental Health*, *15*(4), 241–253. doi:10.1038/nbt.3121.ChIP-nexus PMID:24707587

Haugen, P. T., Evces, M., & Weiss, D. S. (2012). Treating posttraumatic stress disorder in first responders: A systematic review. *Clinical Psychology Review*, *32*(5), 370–380. doi:10.1016/j.cpr.2012.04.001 PMID:22561967

Hoge, C. W., Riviere, L. A., Wilk, J. E., Herrell, R. K., & Weathers, F. W. (2014). The prevalence of post-traumatic stress disorder (PTSD) in US combat soldiers: A head-to-head comparison of DSM-5 versus DSM-IV-TR symptom criteria with the PTSD checklist. *The Lancet. Psychiatry*, *1*(4), 269–277. doi:10.1016/S2215-0366(14)70235-4 PMID:26360860

Johnson, J. (2010). *Understanding Differences in Stress and Coping Between Full-Time and Paid-On-Call Firefighters*. Walden University.

Kaminer, D., Eagle, G., & Crawford-Browne, S. (2016). Continuous traumatic stress as a mental and physical health challenge: Case studies from South Africa. *Journal of Health Psychology*. doi:10.1177/1359105316642831 PMID:27091760

Kessler, R. C., Berglund, P., Delmer, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, *62*(6), 593–602. doi:10.1001/archpsyc.62.6.593 PMID:15939837

Lang, P. J., & McTeague, L. M. (2011). Discrete and Recurrent Traumatization in PTSD: Fear vs. Anxious Misery. *Journal of Clinical Psychology in Medical Settings*, *18*(2), 207–209. doi:10.100710880-011-9252-5 PMID:21626350

Marmar, C. R., McCaslin, S. E., Metzler, T. J., Best, S., Weiss, D. S., Fagan, J., ... Neylan, T. (2006). Predictors of posttraumatic stress in police and other first responders. *Annals of the New York Academy of Sciences*, *1071*(1), 1–18. doi:10.1196/annals.1364.001 PMID:16891557

McTeague, L. M., Lang, P. J., Laplante, M.-C., Cuthbert, B. N., Shumen, J. R., & Bradley, M. M. (2010). Aversive Imagery in Posttraumatic Stress Disorder: Trauma Recurrence, Comorbidity, and Physiological Reactivity. *Biological Psychiatry*, *67*(4), 346–356. doi:10.1016/j.biopsych.2009.08.023 PMID:19875104

North, C. S., Tivis, L., McMillen, J. C., Pfefferbaum, B., Cox, J., Spitznagel, E. L., ... Smith, E. M. (2002). Coping, functioning, and adjustment of rescue workers after the Oklahoma City bombing. *Journal of Traumatic Stress*, *15*(3), 171–175. doi:10.1023/A:1015286909111 PMID:12092908

Nuttman-Shwartz, O., & Shoval-Zuckerman, Y. (2016). Continuous Traumatic Situations in the Face of Ongoing Political Violence: The Relationship Between CTS and PTSD. *Trauma, Violence & Abuse*, *17*(5), 562–570. doi:10.1177/1524838015585316 PMID:25966968

Paulus, D. J., Vujanovic, A. A., Schuhmann, B. B., Smith, L. J., & Tran, J. (2017). Main and interactive effects of depression and posttraumatic stress in relation to alcohol dependence among urban male firefighters. *Psychiatry Research*, *251*, 69–75. doi:10.1016/j.psychres.2017.02.011 PMID:28189939

Pietrzak, R. H., Schechter, C. B., Bromet, E. J., Katz, C. L., Reissman, D. B., Ozbay, F., ... Southwick, S. M. (2012). The burden of full and subsyndromal posttraumatic stress disorder among police involved in the World Trade Center rescue and recovery effort. *Journal of Psychiatric Research*, *46*(7), 835–842. doi:10.1016/j.jpsychires.2012.03.011 PMID:22464942

Stanley, I. H., Boffa, J. W., Hom, M. A., Kimbrel, N. A., & Joiner, T. E. (2017). Differences in psychiatric symptoms and barriers to mental health care between volunteer and career firefighters. *Psychiatry Research*, *247*, 236–242. doi:10.1016/j.psychres.2016.11.037 PMID:27930964

U.S. Department of Labor. (2007). *2007 census of fatal occupational injuries (revised data)*. Author.

Weathers, F. W., Bovin, M. J., Lee, D. J., Sloan, D. M., Schnurr, P. P., Kaloupek, D. G., ... Marx, B. P. (2017). The Clinician-Administered PTSD Scale for DSM–5 (CAPS-5): Development and Initial Psychometric Evaluation in Military Veterans. *Psychological Assessment*, *30*(3), 383–395. doi:10.1037/pas0000486 PMID:28493729

Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). *The PTSD Checklist for DSM-5 (PCL-5)*. Academic Press.

ADDITIONAL READING

Beidel, D. C., Frueh, C. B., Neer, S. M., Bowers, C., & Rizzo, A. (2014). *Using Virtual Reality as Part of an Intensive Treatment Program for PTSD* (pp. 1–10). I/ITSEC.

Beidel, D. C., Frueh, C. B., Neer, S. M., Bowers, C., Trachik, B., Uhde, T. W., & Grubaugh, A. (2017). Trauma management therapy with virtual-reality augmented exposure therapy for combat-related PTSD: A randomized controlled trial. *Journal of Anxiety Disorders*, 1–11. doi:10.1016/j.janxdis.2017.08.005 PMID:28865911

Beidel, D. C., Frueh, C. B., Neer, S. M., & Lejuez, C. W. (2017). The efficacy of Trauma Management Therapy: A controlled pilot investigation of a three-week intensive outpatient program for combat-related PTSD. *Journal of Anxiety Disorders*, *50*(May), 23–32. doi:10.1016/j.janxdis.2017.05.001 PMID:28545005

Del Ben, K. S., Scotti, J. R., Chen, Y.-C., & Fortson, B. L. (2006). Prevalence of posttraumatic stress disorder symptoms in firefighters. *Work and Stress*, *20*(March), 37–48. doi:10.1080/02678370600679512

Gramlich, M. A., & Neer, S. M. (2018). Firefighter-Paramedic With Posttraumatic Stress Disorder, Horrific Images, and Depression: A Clinical Case Study. *Clinical Case Studies*, *17*(3), 150–165. doi:10.1177/1534650118770792

Lanza, A., Roysircar, G., & Rodgers, S. (2018). First responder mental healthcare: Evidence-based prevention, postvention, and treatment. *Professional Psychology, Research and Practice*, *49*(3), 193–204. doi:10.1037/pro0000192

Marks, M. R., Bowers, C., Trachik, B., James, N. T., & Beidel, D. (2017). Differences in PTSD Symptomatology Between Combat Veterans and Emergency Dispatchers. *Annals of Emergency Dispatch & Response*, *5*(2), 15–21. Retrieved from https://www.aedrjournal.org/differences-in-ptsd-symptomatology-between-combat-veterans-and-emergency-dispatchers/

Moffitt, J., Bostock, J., & Cave, A. (2014). Promoting well-being and reducing stigma about mental health in the fire service. *Journal of Public Mental Health*, *13*(2), 103–113. doi:10.1108/JPMH-02-2013-0004

Richards, D. A., & Rose, J. S. (1991). Exposure Therapy for Post-traumatic Stress Disorder: Four Case Studies. *The British Journal of Psychiatry*, *158*(6), 836–840. doi:10.1192/bjp.158.6.836 PMID:1678664

Sripada, R. K., Rauch, S. A. M., & Liberzon, I. (2016). Psychological Mechanisms of PTSD and Its Treatment. *Current Psychiatry Reports*, *18*(11), 99. doi:10.100711920-016-0735-9 PMID:27671916

Tolin, D. F., & Foa, E. B. (1999). Treatment of a police officer with PTSD using prolonged exposure. *Behavior Therapy*, *30*(3), 527–538. doi:10.1016/S0005-7894(99)80023-9

KEY TERMS AND DEFINITIONS

Exposure Therapy: Behavioral treatment modality that consists of confronting an individual's core fear to elicit anxiety.

First Responder: Occupation related to individuals trained in emergency response.

Imaginal Exposure Scene: Unique account of the patient's index trauma that includes attention to the sights, sounds, and smells that were present during the traumatic event as well as attention to how the patient was behaving, thinking, and feeling.

Intensive Outpatient Program (IOP): Treatment schedule consisting of increase frequency of attendance in comparison to traditional outpatient services. Schedule includes 29 sessions over a three-week period. Incorporates individual, group, and in vivo sessions.

Posttraumatic Stress Disorder: Clinical diagnosis identified by the DSM-5, consisting of intrusion symptoms, avoidance, negative alterations in mood and cognitions, changes in arousal and reactivity following a traumatic event. Traumatic event can be directly experienced, witnessed, or learned about.

Psychoeducation: Information provided to patients about the causes, symptoms, and treatments of mental health conditions.

Trauma Management Therapy: A multi-component behavioral treatment program to address the primary symptoms of PTSD.