


# Delayed Treatment Seeking Following the April 16th Shootings at Virginia Tech: Impact on a First Responder

Clinical Case Studies  
2014, Vol. 13(5) 391–404  
© The Author(s) 2013  
Reprints and permissions:  
sagepub.com/journalsPermissions.nav  
DOI: 10.1177/1534650113512174  
ccs.sagepub.com  


Lauren L. Golden<sup>1</sup>, Russell T. Jones<sup>1</sup>, and Katharine Donlon<sup>1</sup>

## Abstract

This case study discusses the treatment of an emergency responder to the 2007 shooting on Virginia Tech's campus where 33 students and faculty members were killed. After a thorough assessment, *prolonged exposure* (PE) was used to treat the emergency worker, referred to as Jack, for posttraumatic stress disorder (PTSD). Assessment measures administered at the conclusion of treatment, 1 month post-treatment, and 6 months post-treatment suggest that the treatment gains were maintained following the culmination of treatment. The primary aim of this article is to provide support for the effectiveness of PE among emergency responders who develop PTSD. In addition, this case presentation is particularly important given the prevalence of mass shootings in the United States. Several complicating factors, including a delay in treatment seeking, arose over the course of treatment and are discussed.

## Keywords

first responders, emergency workers, trauma, Virginia Tech shootings, PTSD, depression, prolonged exposure

## I Theoretical and Research Basis for Treatment

The need for effective mental health interventions for first responders is well documented, particularly given that these individuals are often repeatedly directly exposed to traumatic situations, placing them at risk for the development of posttraumatic stress disorder (PTSD). Despite the high risk for negative posttraumatic outcomes, many barriers exist to providing first responders with the necessary treatment to address the traumatic stress symptomatology that may arise from job-related experiences. Thus, this article will review the current state of mental health intervention for first responders and the pertinent issues related to the challenges of providing adequate care for their mental health needs. Finally, a case example will be presented to illustrate the effectiveness of a treatment intervention for a first responder who experienced many of the problems unique to this group.

First responders to mass disaster situations are at risk for developing negative psychological sequelae, with symptoms of posttraumatic stress being among the most common. Worldwide, the rates of PTSD in disaster workers are estimated to be between 9% and 37% (Marmar et al., 1999;

---

<sup>1</sup>Virginia Tech, Blacksburg, USA

### Corresponding Author:

Russell T. Jones, Virginia Tech, 137 Williams Hall, Blacksburg, VA 24060, USA.  
Email: rtjones@vt.edu

North et al., 2002). Empirical evidence suggests that the prevalence of PTSD in disaster workers is higher following human-made disasters than natural disasters (North et al., 2002). Unique factors contribute to disaster workers' susceptibility to PTSD such as working with deceased victims, identification with the dead and their families, exposure to dead bodies and human remains, being confronted with multiple injured people, witnessing victims die, and interacting with victims' loved ones (Cetin et al., 2005; Declercq, Meganck, Deheegher, & Hoorde, 2011; Ursano, McCarroll, & Fullerton, 2003).

Many first responders receive some form of psychological debriefing (PD) after responding to a disastrous event, though evidence for the effectiveness of such techniques is mixed. Several methods of PD exist and all aim to reduce levels of distress after trauma by facilitating individuals' abilities to process their reactions to the event, normalizing the event, and providing educational information about effective coping strategies. Widely used is Critical Incident Stress Debriefing (CISD), a small-group intervention designed for use among individuals who have experienced a common traumatic event. It is conducted by mental health professionals and trained peers (Everly, Flannery, & Mitchell, 2000). Empirical evidence does not consistently support the effectiveness of this intervention, and some literature even suggested that it is harmful (Bryant & Harvey, 1996; Pender & Prichard, 2009).

Tuckey (2007) identified potential methodological concerns that hinder our understanding of debriefing techniques, including the importance of accounting for the natural recovery process, needing to collect baseline data to evaluate short- and long-term outcomes, balancing research design and ethical considerations, and standardization across intervention administration (i.e., number of people receiving the intervention, time elapsed after trauma before intervention administration, training of the debriefers). In addition, Foa (2007) recommended that traumatized individuals be provided with practical information about possible mental health symptomatology arising after trauma, rather than assuming that PD alone is an effective intervention for addressing PTSD symptomatology after a traumatic event.

It is important to consider the rescue workers who develop chronic and debilitating symptoms of PTSD after a traumatic event, as these individuals often go unrecognized. First responders can have untreated symptomatology due to the specific demands of their occupation and the perception that they are immune to negative psychological reactions to trauma. Empirical evidence suggests that PTSD developed in emergency personnel directly exposed to the World Trade Center attacks, Pakistani emergency responders to terrorist attacks, and rescue workers after an earthquake in Japan (Nishi et al., 2012; Perrin et al., 2007; Razik, Ehring, & Emmelkamp, 2013). Six years after the World Trade Center attacks, self-report measures of PTSD suggest that more than 4% of a sample of disaster workers deployed to the site experienced symptoms of PTSD. Furthermore, many of these individuals developed delayed-onset PTSD (Cukor et al., 2011). Disaster workers directly exposed to an airplane crash had higher rates of PTSD 13 months after the event than nontraumatized disaster workers at a different airport (Fullerton, Ursano, & Wang, 2004), indicating that symptoms of PTSD can persist over time and warrant consideration in this group of professionals.

Prolonged exposure (PE) is an empirically supported intervention for PTSD (Foa, 2011; Powers, Halpern, Ferenschak, Gillihan, & Foa, 2010; Resick, Nishith, Weaver, Astin, & Feuer, 2002). Exposure therapy is grounded in the notion that exposure to fear stimuli will facilitate emotional processing and allow for the healthy adaptation of trauma-related information. PE consists of two components: (a) *in vivo* exposure intends to encourage the client to expose himself or herself to reminders of the traumatic event in a systematic, gradual manner, and (b) imaginal exposure involves an *in-session* exercise where the client is instructed to close his or her eyes and repeatedly describe the traumatic event in detail (Foa, 2011). A randomized, controlled clinical treatment trial of cognitive behavioral therapy (CBT) with *in vivo* and imaginal exposure components was conducted with disaster workers following the World Trade Center terrorist

attack and demonstrated that disaster rescue and recovery workers who received the CBT and exposure treatment condition showed significantly greater improvement in PTSD symptomatology than those who received the treatment-as-usual condition (Difede et al., 2007). However, this study is limited due to the high drop-out rate in the treatment condition, a confounding variable that reflects many of the complexities hindering the treatment-seeking process.

Quimette et al. (2011) found that veterans of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) reported that stigma-related factors were the most significant barriers to seeking treatment. The veterans indicated that they experienced discomfort with help seeking, primarily related to sharing emotions and feelings, and they believed their problems would subside with time. These individuals also expressed concerns about the perceived social consequences of treatment seeking, such as embarrassment if others realize that they are seeking treatment. Similarly, first responders who may assume a “macho” demeanor may find that help seeking is incongruent with their self-schemas (North et al., 2002). As first responders have been described as a tight-knit group, individuals in distress may be reluctant to seek help when others do not need help or when they are not supportive of colleagues’ decisions to seek help, which could further deter those in need.

Many individuals will avoid seeking treatment for symptoms of PTSD for multiple reasons, including reluctance to confront traumatic reminders and the belief that symptoms will subside without treatment. Avoidance strategies may include mental and behavioral disengagement, denial and distraction, and avoidance coping, which are associated with greater levels of distress (Kumpula, Orcutt, Bardeen, & Varkovitzky, 2011; Moos & Schaefer, 1993). By avoiding treatment, individuals often continue to experience symptoms of chronic PTSD.

PE is based on the concept that PTSD symptoms will decrease when individuals directly confront avoided stimuli. Occasionally individuals seek treatment and shortly after sharing the experience with the therapist will perceive that they are better and their symptoms are gone. This occurs when clients perceive that they have made significant gains in treatment before beginning exposures or deeply processing the event. This phenomenon is important to consider because it can complicate the treatment process.

It is critically important to better understand the complexities and challenges to initiating treatment for first responders, and determine ways to improve treatment retention and facilitate service delivery in this population. In this case example, it was hypothesized that PE would successfully result in a significant decline in PTSD symptoms at the conclusion of treatment, which would be maintained across follow-up assessment sessions.

## 2 Case Introduction

Jack was a first responder to the Virginia Tech shootings on April 16, 2007 (here forth referred to as 4/16) where 33 students and faculty members, including the gunman (a Virginia Tech student), were fatally shot. Jack sought treatment for the first time 4.5 years after the shootings occurred. Although Jack had reportedly seen “hundreds” of deaths over the course of his career, he identified 4/16 as being the most traumatic event he had ever experienced. He indicated that despite not knowing any of the deceased individuals, the sheer number of people killed and his difficulty understanding the reason for their deaths made the experience particularly traumatic.

## 3 Presenting Complaints

Since 4/16, Jack reported experiencing feelings of anger when thinking about the event. He admitted that in the 4.5 years since the shootings occurred, he had avoided memories and reminders of the event and no longer felt safe in his community. His symptoms were also causing problems in his relationships with family members. Jack reported feeling disconnected from his wife

and was unable to talk to her about his experiences on 4/16. In addition, immediately prior to seeking treatment, he reported that he was scheduled to deliver a guest lecture in an academic building adjacent to where the shootings occurred. Upon entering the building, Jack began to experience intense traumatic reminders and intrusive memories of the shootings, causing him to sweat and his hands to tremble. Jack reported being frightened by his unexpected reaction. When asked why he waited 4.5 years to seek treatment, Jack explained that he did not realize how much the shootings had affected him and had assumed that his residual symptoms would subside with time. Notably, he denied that stigma-related factors contributed to his reluctance to seek treatment immediately after the shootings.

## 4 History

### *Education and Social History*

Jack is married and has close relationships with his wife and children. After graduating from high school, Jack held several public service jobs, and is currently working in the emergency response field. He enjoys his work and is pleased with his occupational accomplishments.

### *Medical, Mental Health, and Substance Use*

Jack reported a number of health complaints, including chronic asthma and irritable bowel syndrome, and has a history of several major surgeries for colon, gall bladder, and hip issues. At the time of treatment, Jack was taking several drugs, including Flomax, Nexium, Singulair, and Celexia. He denied regularly using drugs or alcohol but admitted that he drank socially in the past. Jack reported receiving cognitive behavioral-based treatment several years prior to 4/16 earlier due to his grief over several losses in his family. Jack reported no history of legal troubles.

## 5 Assessment

A detailed assessment battery was administered over the course of nine pretreatment sessions. A number of factors contributed to the extended length of the assessment phase. After the initial session, Jack reported a significant decrease in symptoms of anxiety and depression. This presented somewhat of a unique problem in that Jack's unanticipated relief after discussing his experiences with the therapist led him to believe that treatment was unnecessary. This phenomenon may occur when an individual confronts a long-standing fear (i.e., talking about the trauma) and experiences a feeling of success. However, this is problematic because individuals falsely believe that their symptoms have resolved when in fact they have yet to deeply process the event.

Therefore, prior to moving forward with the formal assessment process, it was necessary for the therapist to provide Jack with psychoeducation regarding the nature and chronicity of PTSD. This step was important for Jack to understand and fully appreciate the need for treatment. After receiving additional information about PTSD, Jack acknowledged that, although he noticed some improvement in his symptoms after discussing the trauma, he still had more progress to make to improve his quality of life.

As such, the assessment phase was extended to accommodate for this unforeseen reaction to the intake process and subsequently gain Jack's commitment to the treatment process. A lengthy but thorough assessment battery, consisting of the Beck Depression Inventory-II (BDI-II), Impact of Events Scale-Revised (IES-R), Anxiety Disorders Interview Schedule for *DSM-IV* (ADIS-IV), Detailed Assessment of Posttraumatic Stress disorder (DAPS), Minnesota Multiphasic Personality Inventory-II (MMPI-II), and the Multimodal Life History form

(MMLH), was administered. During the assessment phase, Jack was observed to provide information about 4/16 in a fact-based, “police-report” manner. He appeared to have difficulty deviating from the factual events of the day to provide personal information about his own beliefs, emotions, and experiences of the trauma. Time was spent encouraging Jack to reflect back on his personal experiences rather than repeating the information as if it were part of his job duties.

### **BDI-II**

The BDI-II (Beck, Steere, & Brown, 1996) is a self-report instrument used to assess the severity of depressive symptomatology. Clients respond to questions comprising various domains, including hopelessness, sadness, and sleep patterns, on the 21-item self-report questionnaire. Responses ranging from 0 to 3 are summed to obtain a total score: a total score of 1 to 13 falls in the minimal range, 14 to 19 falls in the mild range, 20 to 28 falls in the moderate range, and 29 to 63 falls in the severe range of symptomatology.

### **IES-R**

The IES-R (Weiss & Marmar, 1997) is a self-report instrument used to measure distress following a traumatic event. Clients are asked to rate their distress levels on a 0 to 4 scale. The responses are then used to obtain subscale scores for avoidance, intrusion, and hyperarousal. Previous studies have demonstrated Cronbach’s alphas ranging from .87 to .94 for the intrusion subscale, .84 to .87 for the avoidance subscale, and .79 to .91 for the hyperarousal subscale (Creamer, Bell, & Failla, 2003; Weiss & Marmar, 1997).

### **ADIS-IV**

The ADIS-IV (Brown, DiNardo, & Barlow, 2004) is a diagnostic semistructured interview based on the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000) that assesses for anxiety, mood, and somatoform disorders. The interview uses a “branching format” that starts by screening questions to determine whether symptom-specific questions are relevant. The ADIS-IV has demonstrated moderate to high interrater reliability (DiLillo, Hayes, & Hope, 2006).

### **DAPS**

The DAPS (Briere, 2001) is a 105-item inventory that yields probable *DSM-IV-TR* diagnostic statuses for PTSD and acute stress disorder (ASD). It assesses for previous trauma exposure, as well as immediate psychological reactions (cognitive, emotional, and hyperarousal) and impairment related to the traumatic event. The DAPS includes two validity scales that measure symptom overexaggeration and minimization as well as three supplementary scales evaluating event-related dissociation, substance abuse, and suicidality, which are often associated with PTSD.

### **MMPI-II**

The MMPI-II (Hathaway & McKinley, 1943) is a widely used and empirically supported objective personality assessment. The assessment generates a comprehension profile that can be used to facilitate the therapeutic process. Examinees’ responses yield scores on various subscales (e.g., hypochondriasis) that can be particularly informative for understanding more about possible

traumatic stress symptoms. Another strength of the MMPI-II is its ability to detect examinees' "fake" responses, symptom denial, and attempts to portray a particular impression.

### **MMLH**

The MMLH (Lazarus & Lazarus, 1991) is used to obtain comprehensive background information about an individual and allows the clinician to gain a better understanding of a client's behaviors, affective processes, sensations, images, cognitions, interpersonal relationships, and medical history.

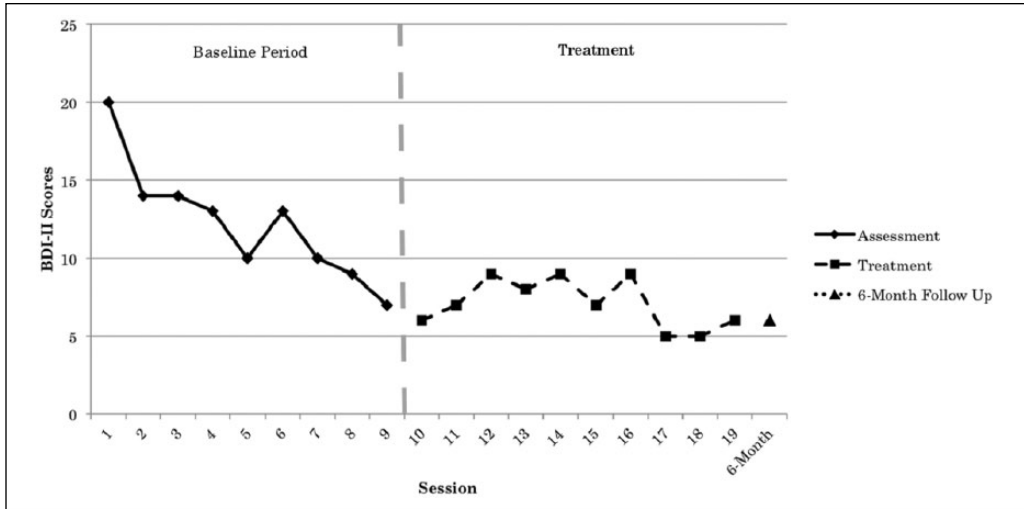
## **6 Case Conceptualization**

Given the results of Jack's assessment, on multiple instruments as well as information gleaned from his clinical interview, it was clear that he was suffering from a great degree of traumatic stress prior to initiating treatment. As alluded to above, he reported feelings of anger, intrusive recollections, and avoidance of thoughts, feelings, and conversations associated with the 4/16 trauma. In addition, on the DAPS, he reported a significant level of symptoms within the reexperiencing, avoidance, and hyperarousal domains.

It is clear that many of Jack's symptoms may be conceptualized within a biopsychosocial framework. That is, the fact that he was placed on Celexia following the shootings supports the findings that traumatic events may indeed impact serotonin levels in the brain (Stein, van der Linden, & van Balkom 2000). With regard to his psychological functioning, reports of avoidance of memories and reminders of the event, as well as not feeling safe in his community, are certainly consistent with findings documenting the psychological consequences of trauma. His reports of being angry that this event occurred also fits within this domain. Jack's documentation of not feeling connected to his family members, particularly his wife, also points to the negative impact of PTSD symptomatology on individuals' functioning within the social domain.

When discussing the development of the above stated symptoms, Jack explained that he was seeking treatment because he was still trying to process the shootings and their consequences. He stated that he felt that his community had been disrupted and he no longer felt safe. Although he opined that he initially thought that he would get over this event, after 4.5 years, he came to the conclusion that he needed therapy. He was able to admit this to himself when returning to the Virginia Tech campus to deliver a speech in a building near the site where the shootings actually took place. He reported having an extremely intense traumatic reminder when entering the building. This experience, as well as ongoing symptoms, led him to the conclusion that he must obtain some type of psychological intervention. Jack's occupation as a first responder requires him to repeatedly witness unpleasant and disturbing events, which inevitably contributed to his belief that he should be able to perform his duties without any psychological distress. Prior to 4/16, Jack was successful in doing so. However, because of Jack's unrealistic belief that he should be able to easily manage his feelings about 4/16, he did not express his feelings or fully process the experience, but rather avoided cognitive and physical reminders of the event. Although the avoidance allowed Jack to function in daily life, it prevented him from adaptively processing the traumatic experience and ultimately contributed to the development of his PTSD symptomatology.

Although Jack's responses to questions on the ADIS-IV did not indicate a diagnosis of PTSD, he endorsed significant distress and impairment related to multiple reexperiencing and avoidance symptoms. In addition, Jack's report on the DAPS supported the designation of "probable PTSD." Jack's MMPI-II scores included significant elevations on the hypochondriasis (Hs), paranoia (Pa), and psychasthenia (Pt) scales, which are associated with increased levels of traumatic stress, and his score on the PTSD (PK) scale further supported this conclusion. Behaviorally, the symptoms Jack reportedly experienced when confronted with a traumatic reminder of the events of 4/16 (i.e., visiting an academic building on campus) further attested to his failure to recover from the trauma.



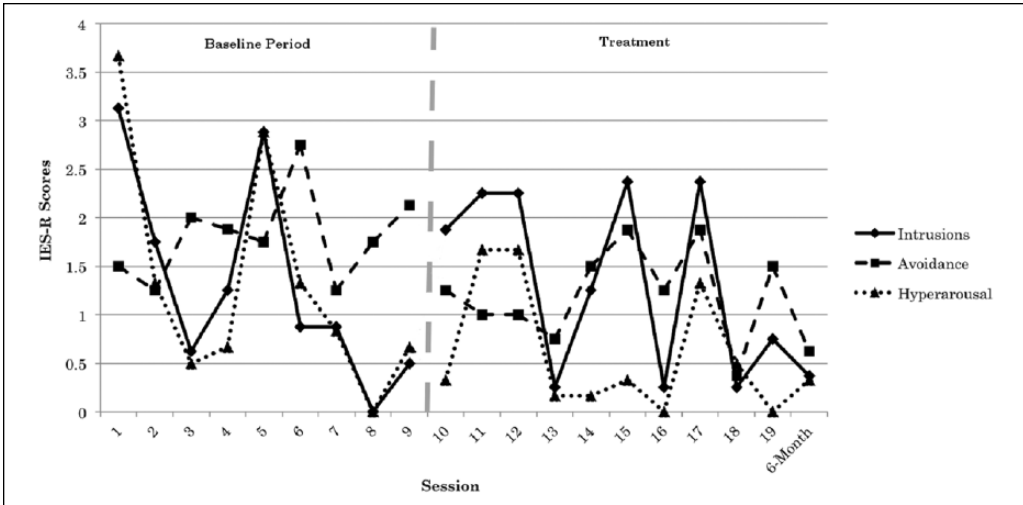
**Figure 1.** Baseline and treatment outcome assessments: BDI-II scores.  
 Note. BDI-II = Beck Depression Inventory–II.

Based on Jack's reported symptomatology, PE therapy was selected as the treatment of choice. PE is an empirically supported intervention for PTSD that has received more empirical support for its efficacy than other established treatments (Foa, 2011), and significantly improves symptomatology compared with a control group (Resick et al., 2002). Exposure therapy is grounded in the theory that exposure to fear stimuli will facilitate emotional processing and allow for the healthy adaptation of trauma-related information. PE consists of two components: in vivo exposure involves encouraging the client to expose himself or herself to reminders of the traumatic event in a systematic, gradual manner, and imaginal exposure is conducted during sessions with the therapist. The client is asked to close his or her eyes and repeatedly describe the traumatic event in detail (Foa, 2011). A randomized controlled clinical treatment trial of CBT with in vivo and imaginal exposure components was conducted with disaster workers following the World Trade Center terrorist attack and showed that the disaster rescue and recovery workers who received the CBT and exposure treatment condition showed significant improvement in PTSD symptomatology than those who received the treatment as usual condition (Difede et al., 2007). However, a major limitation of this study is the high drop-out rate in the treatment condition, illustrating one of the many complexities that hinder the treatment-seeking process.

The nature and magnitude of his avoidance behavior greatly reinforced the selection of PE given that it targets avoidance through the use of in vivo and imaginal exposures. Through repeated exposure to threatening stimuli, Jack's harmless stimuli that triggered a fear response allowed him to emotionally process the events of 4/16 and develop more realistic beliefs about the world.

## 7 Course of Treatment and Assessment of Progress

Ten treatment sessions, administered in accordance with the PE treatment manual (Foa, 2007), followed the conclusion of the assessment. The clinician, a doctoral-level graduate student, was supervised by a licensed clinical psychologist who had received PE training. Supervision was carried out during a weekly 3-hr group practicum team meeting, as well as 1-hr weekly individual meetings, and consisted of videotape review and discussion to ensure that treatment was appropriately administered. The treatment sessions ranged in length from 55 to 120 min. To document Jack's progress and monitor his symptoms, the BDI-II and IES-R were administered prior to each session (see Figures 1 and 2).



**Figure 2.** Baseline and treatment outcome assessments: IES-R scores.  
Note. IES-R = Impact of Events Scale–Revised.

**Treatment Session 1:** During the initial treatment session, Jack discussed his reason for seeking treatment. He shared his experiences with a variety of traumatic events and identified several symptoms of PTSD related to the events of 4/16. Jack stated that he believed he had dealt with his symptoms related to the 4/16 and had successfully completed the psychological healing process. Only when the therapist challenged this statement, did Jack concede that there were still lingering traumatic effects from the shootings. The rationale for PE was presented by the clinician and the breathing retraining exercise was introduced and practiced. Jack indicated that the breathing exercise helped him feel relaxed, and he agreed to practice at home before the following session.

**Treatment Session 2:** At the onset of this session Jack articulated his disappointment with a court ruling in favor of two families who lost daughters in the 4/16 shootings. He then went on to explain that the court case had elicited unwanted memories about 4/16, and he anticipated elevations of distress and depression in response. Jack's IES-R scores during this session were consistent with his concern. Toward the beginning of the session, the clinician discussed common reactions to trauma. Jack identified his reactions to the shootings but, at times, appeared to have difficulty differentiating between his reactions to 4/16 and his reactions to other events. He was then introduced to the Subjective Units of Distress Scale (SUDS) and prompted to identify triggers of anxiety and accompanying feelings. After creating an in vivo hierarchy, Jack selected two manageable exposures to be completed before the next session. The two exposures included visiting the 4/16 Memorial on Virginia Tech's campus and spending time in crowds. Jack was asked to provide SUDS ratings for these exposures and bring his ratings to the following session.

**Treatment Session 3:** At the outset of the session, Jack stated that he was unable to complete his out-of-session assignment for the week, which he attributed to his busy schedule. The therapist rereviewed the rationale for PE, placing particular attention on the role of avoidance in maintaining traumatic stress symptoms. At the end of the session, the therapist reiterated the importance of completing out-of-session assignments. Jack was asked to complete his previous week's assignment for the coming week.

**Treatment Session 4:** The goal of this session was to provide additional rationale for completing imaginal exposures and to actually complete his first imaginal exposure. Jack's SUDS

ratings during his out-of-session assignment ranged from 65 to 80, and he stated he was “surprised” at how much the exposures affected him. Upon prompting from the therapist, Jack admitted that he still had great gains to make in therapy. Jack’s out-of-session assignment for the week was to continue his in vivo exposures (i.e., visiting the 4/16 Memorial and spending time in crowds) and listen to his audiotaped imaginal exposure.

**Treatment Session 5:** Regarding his most recent homework assignment, Jack stated that his in vivo exposures were not as difficult as he expected them to be. However, Jack indicated that listening to his imaginal exposure tapes at home was quite distressing and asked his wife to be present as a source of support. Specifically, Jack reportedly struggled with his recount of walking through Norris Hall, where the shootings took place, and seeing large amount of blood. Despite the difficulty with this imaginal exposure exercise, Jack said that it was easier to complete than earlier imaginal exposures. He also reported that his memory of events on the day of the shootings was not chronological. The clinician urged Jack to order the series of events chronologically during future imaginal exposure exercises to best facilitate his consolidation of the traumatic memory. The clinician and Jack also discussed the approaching fifth anniversary of 4/16, and he was encouraged to plan this day to afford him the greatest amount of comfort. Once again, Jack received out-of-session assignments to complete his imaginal and in vivo exposure exercises. Jack was instructed to listen to his imaginal exposure tapes without his wife being present.

**Treatment Sessions 6:** At the outset of his sixth treatment session, Jack reported that he had completed his in vivo exposure to visit the 4/16 Memorial. The focus of the treatment session was to recount the most distressing portion of his trauma narrative, which he identified as walking through Norris Hall after the shooting. With support from the clinician, Jack was able to do this multiple times while remaining appropriately engaged. His SUDS ratings peaked at 50.

**Treatment Session 7:** During Session 7, Jack continued to successfully complete his imaginal exposure exercises, and the clinician commended him for his ability to do so. Jack again received out-of-session assignments to complete his in vivo and imaginal exposure exercises.

**Treatment Session 8:** The eighth treatment session began with Jack reporting that he had experienced another traumatic event earlier in the week. The Federal Bureau of Investigation (FBI) alerted his agency of a threatened school shooting at a local high school. Although the threat was ultimately unsubstantiated, Jack was involved with the situation for several hours. When asked about his reactions to the event, Jack indicated that he experienced some anxiety but was able to decompress well once the threat was removed. Jack also continued to make progress with his imaginal exposure exercises, expressing that he no longer experienced difficulty when completing them. He attributed this to the fact that he had grown accustomed to hearing himself recount the events of 4/16. Jack then spent time discussing the positive changes he had noticed in himself since coming to treatment, stating that he felt like a huge weight had come off of his shoulders. For his out-of-session assignment, the clinician instructed Jack to complete his in vivo and imaginal exposures. The in vivo exposure consisted of visiting Norris Hall.

**Treatment Sessions 9:** During the ninth treatment session, Jack reported that he had completed his imaginal exposure exercises 7 times during the previous week. Like with the most recent treatment session, Jack indicated that he no longer experienced difficulties with the exercise as he had grown accustomed to hearing himself recount the events. Jack admitted that he did not complete his in vivo exposure exercise, and explained that he had been avoiding completing this exposure. The clinician discussed the rationale for completing the exposure and reminded Jack about the maladaptive role that avoidance plays in maintaining PTSD. He committed to visiting Norris Hall in the coming week. To facilitate his success with this exposure, he was asked to carry out his imaginal exposure exercise each day for the following week.

**Treatment Session 10:** Jack completed his in vivo exposure in Norris Hall prior to his 10th treatment session and reported that it was “anti-climactic.” He reported that his SUDS peaked at 60. Specifically, Jack reported feeling the most discomfort just before entering the building the first time and again just before entering the doors that lead to the second floor where the shootings occurred. Jack explained that once he reached the second floor, he realized the interior of the building no longer resembled the building as it was on 4/16 due to renovations the school since that time (i.e., repainting and restructuring). He opined that changes to the building facilitated his success with this exposure. Jack affirmed that he no longer experienced discomfort by being in Norris Hall but that he in fact enjoyed returning to this building and seeing the changes. During a return trip to Norris Hall later that week, Jack’s SUDS rating peaked at 10 and he stated that he “could have been walking through any building.” The clinician encouraged Jack to visit Norris Hall 4 times during the coming week and continue to complete his imaginal exposure exercises.

**Final Session:** A final session was scheduled to conclude treatment. At the outset of this session, Jack reported that he had completed the in vivo exposure and felt no anticipatory anxiety. He also indicated that he felt comfortable being in Norris Hall. Jack and the therapist reviewed the course of treatment and Jack committed to returning for a posttreatment session 6 months after the final session. Jack was encouraged to continue to complete the in vivo and imaginal exposure exercises during this time.

## 8 Complicating Factors

Consistent with the experiences of other first responders, Jack had faced multiple events he perceived to be traumatic prior to the events of 4/16. Although he experienced symptoms of PTSD related to 4/16, Jack believed that his symptoms would resolve over time. Only 4.5 years later did Jack realize that he was not successfully coping with his symptoms and decided to seek treatment. Jack’s misconception of being able to recover from the event without treatment presented the initial challenge for this case.

Perhaps the most glaring obstacle in treating many first responders is the frequency of traumatic exposures coupled with the common perception that they will naturally recover without needing intervention. While there were drops in the IES-R and BDI scores during baseline, what was particularly telling were the elevations in each reported at Session 5 as the result of a second shooting. This suggests that in the absence of future traumas, a sense of well-being and minimal distress prevails. However, when future traumas do occur, increases in symptomatology are reported. Given the frequent reexposure to traumatic events among this group, our data suggest that distress and depression may be present more often than not. Although Jack’s scores on the IES-R and BDI-II decreased during the initial sessions with the clinician, it was evident that he continued to experience high levels of distress when his scores elevated during the fifth treatment session as a result of the potentially threatening situation at the high school. Based on his scores, Jack seemed to maintain a state of minimal distress until confronted with another, similar situation, which served as a traumatic reminder. Jack’s experience may be representative of a larger problem for first responders. That is, many individuals in this group may experience lingering symptoms from a particular traumatic experience, but are not functionally impaired and do not exhibit symptoms of distress until they encounter a related stressor. This is problematic and may result in the underdetection of serious psychological distress.

In light of this pattern, it is important to consider the possibility that job-related experiences for first responders may actually serve as traumatic reminders for individuals who have previously experienced traumatic events and have the potential to exacerbate symptomatology. Psychoeducational materials should be distributed to increase awareness of this potential danger and encourage these individuals to seek treatment or offer information about coping skills (e.g.,

deep breathing and finding social support). For individuals with previous treatment histories, booster sessions may also be beneficial.

An additional concern that became evident during the course of Jack's treatment was his changed worldview. Jack reported that the sheer magnitude of the tragedy affected him more deeply than other events to which he had been exposed. Jack equated the scene at Virginia Tech to a "war-zone," and poignantly stated that he had "seen war on the television but never at home." Specifically, Jack commented on the age of the victims, saying "these kids were not at the prime of their lives, they were getting ready to start their lives." From a personal standpoint, Jack explained how school is "supposed to be a safe place" and that he never feared sending his own children to school. Finally, Jack expressed anger that "one person screwed up our quaint little area" and how he "never thought it would happen here." Jack's altered worldview is not unique as many individuals with symptoms of PTSD report similar changes in thinking.

Another complicating factor in Jack's treatment was the occurrence of multiple traumatic reminders during the course of treatment. In particular, Jack endorsed elevated levels of distress coinciding with the threatened shooting at the local high school and the fifth anniversary of the 4/16 events. The continued occurrence of traumatic reminders underscores the continued degree of vulnerability among first responders.

## 9 Access and Barriers to Care

It is clear that PE treatment for first responders can be quite successful in significantly lessening distress and symptoms of PTSD following a mass shooting. Our findings are consistent with previous published reports on the effectiveness of this evidence-based intervention. Particularly relevant to this study is the emphasis on reactions to a mass shooting event. Barriers to treatment are discussed below.

## 10 Follow-Up

As noted by the 6-month follow-up data using the ADIS-IV, BDI-II, and IES-R measures, maintenance of desired gains was evident (please refer to Figures 1 and 2). Scores from the ADIS-IV, BDI-II, and the IES-R substantiate this claim. Not only was his subclinical level of PTSD and depression maintained but consistent drops were also evident. Anecdotally, Jack stated that treatment helped him learn how to better deal with similar tragedies. Notably, Jack claimed that his success in therapy was "one of his victories."

## 11 Treatment Implications of the Case

There are several implications for future clinical work that can be learned from the current case examination. First, this case highlights the importance of providing psychological interventions for first responders after large-scale events. Consistent with our hypothesis, Jack's success in treatment offers preliminary support for the applicability of PE to first responders who experience trauma while responding to a mass casualty event. PE has been shown to lessen PTSD symptoms following a number of traumatic experiences, but to our knowledge, it has not been applied to emergency workers other than the responders to the September 11th attacks on the World Trade Center.

The concept of readiness is particularly interesting in Jack's case. For instance, Jack's IES-R scores (see Figure 2) decreased soon after initiating treatment, which may be related to his readiness to do so 4.5 years after the event. It may have been the case that Jack experienced a sense of empowerment during the assessment phase following his brave decision to confront his distress and seek treatment. In practice, it would be beneficial for emergency workers or first responders

to have more awareness of the importance of seeking treatment. It is quite possible that an individual's initial feelings of fear and apprehension can be significantly lessened by the initial confrontation of the index trauma.

Finally, Jack's desire to prematurely terminate treatment before it had officially begun made this case particularly unique. Despite his claims of symptom relief on the IES-R and BDI-II after discussing the trauma, it became apparent to Jack and the clinician that he had more progress to make in treatment. During the course of the assessment, Jack was encouraged to discuss his experiences of 4/16 for the first time. He reported feeling somewhat relieved to have talked about his experience and stated that he felt safe enough to discuss the event for the first time. This initial relief he felt made him believe that he had completed the objectives of treatment despite the fact that the treatment session had not yet been initiated. In fact, once Jack began to complete the imaginal and in vivo exposure components of treatment, it was clear that additional treatment was warranted. Interestingly, primary exposure played a crucial role in bringing Jack to treatment, keeping him interested in treatment, and ultimately helping him process and move past the events that occurred on 4/16.

## 12 Recommendations to Clinicians and Students

Overall, one of the most important lessons learned from this case study is the importance of promoting mental health awareness in the community of emergency workers and first responders. With more awareness and acceptance, emergency workers and first responders may be more likely to seek help. For this group of individuals in particular, it may be beneficial to present treatment as the opportunity for them to extend the courage, reliance, and commitment they use to help others toward helping themselves.

It is important to consider the potential benefits of PE, given the multiple exposures to trauma among first responders. Future work should focus on the potential role of readiness to change, with specific emphasis on how ambivalence and lack of awareness of one's own symptoms may lessen the likelihood of committing to treatment and subsequently attaining the desired gains from PTSD treatment (Murphy, Taylor, & Townshend, 1994).

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

### References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX: Psychological Corporation.
- Briere, J. (2001). *Detailed Assessment of Posttraumatic Stress (DAPS)*. Odessa, FL: Psychological Assessment Resources.
- Brown, T. A., DiNardo, P., & Barlow, D. H. (2004). *Anxiety Disorders Interview Schedule Adult Version (ADIS-IV): Client interview schedule*. San Antonio, TX: Psychological Corporation.
- Bryant, R. A., & Harvey, A. G. (1996). Posttraumatic stress reactions in volunteer firefighters. *Journal of Traumatic Stress, 9*, 51-62.
- Cetin, M., Kose, S., Ebrinc, S., Yigit, S., Elhai, J., & Basoglu, C. (2005). Identification and posttraumatic stress disorder symptoms in rescue workers in the Marmara, Turkey earthquake. *Journal of Traumatic Stress, 18*, 485-489.

- Creamer, M., Bell, R., & Failla, S. (2003). Psychometric properties of the impact of Event Scale-Revised. *Behaviour Research and Therapy, 41*, 1489-1496.
- Cukor, J., Wyka, K., Mello, B., Olden, M., Jayasinghe, N., Roberts, J., & Difede, J. (2011). The longitudinal course of PTSD among disaster workers deployed to the World Trade Center following the attacks of September 11th. *Journal of Traumatic stress, 24*, 506-514.
- Declercq, F., Meganck, R., Deheegher, J., & Van Hoorde, H. (2011). Frequency of and subjective response to critical incidents in the prediction of PTSD in emergency personnel. *Journal of traumatic stress, 24*, 133-136.
- Difede, J., Malta, L. S., Best, S., Henn-Haase, C., Metzler, T., Bryant, R., & Marmar, C. (2007). A randomized controlled clinical treatment trial for World Trade Center attack-related PTSD in disaster workers. *Journal of Nervous and Mental Disease, 195*, 861-865.
- DiLillo, D., Hayes, S. A., & Hope, D. A. (2006). Sensitivity of the Anxiety Disorder Interview Schedule IV in detecting potentially traumatic childhood maltreatment. *Journal of Psychopathology and Behavioral Assessment, 28*, 131-135.
- Everly, G. S., Flannery, R. B., & Mitchell, J. T. (2000). Critical incident stress management (CISM): A review of the literature. *Aggression and Violent Behavior, 5*, 23-40.
- Foa, E. B. (2007). *Effective treatments for PTSD* (2nd ed). New York, NY: Guilford Press.
- Foa, E. B. (2011). Prolonged exposure therapy: Past, present, and future. *Depression and Anxiety, 28*, 1043-1047.
- Fullerton, C. S., Ursano, R. J., & Wang, L. (2004). Acute stress disorder, posttraumatic stress disorder, and depression in disaster or rescue workers. *American Journal of Psychiatry, 161*, 1370-1376.
- Hathaway, S. R., & McKinley, J. C. (1943). *The Minnesota Multiphasic Personality Inventory* (Rev. ed.). Minneapolis: University of Minnesota Press.
- Koenig, H. G., McCullough, M., & Larson, D. B. (2001). *Handbook of religion and health*. New York, NY: Oxford University Press.
- Kumpula, M. J., Orcutt, H. K., Bardeen, J. R., & Varkovitzky, R. L. (2011). Peritraumatic dissociation and experiential avoidance as prospective predictors of posttraumatic stress symptoms. *Journal of Abnormal Psychology, 120*, 617-627.
- Lazarus, A. A., & Lazarus, C. N. (1991). *Multimodal Life History Inventory*. Champaign, IL: Research 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. *Journal of Nervous and Mental Disease, 187*, 15-22.
- McCullough, M. E., Hoyt, W. T., Larson, D. B., Koenig, H. G., & Thoresen, C. (2000). Religious involvement and mortality: A meta-analytic review. *Health Psychology, 9*, 211-222.
- Moos, R. H., & Schaefer, J. A. (1993). Coping resources and processes: Current concepts and measures. In L. Goldberger & S. Breznitz (Eds.), *Handbook of stress: Theoretical and clinical aspects* (2nd ed., pp. 234-257). New York, NY: Free Press.
- Murphy, F., Taylor, G., & Townshend, J. (1994). Assessing and promoting families' readiness for change and growth. In L. N. Gottlieb & H. Ezer (Eds.), *A perspective on health, family, learning and collaborative nursing*. Montreal, Quebec, Canada: McGill University, pp. 365-369.
- Nishi, D., Koido, Y., Nakaya, N., Sone, T., Noguchi, H., Hamazaki, K., & Matsuoka, Y. (2012). Peritraumatic distress, watching television, and posttraumatic stress symptoms among rescue workers after the Great East Japan earthquake. *PLoS ONE, 7*(4), e35248.
- North, C. S., Tivis, L., McMillen, J. C., Pfefferbaum, B., Spitznagel, E. L., Cox, J., . . . Smith, E. M. (2002). Psychiatric disorders in rescue workers after the Oklahoma City bombing. *American Journal of Psychiatry, 159*, 857-859.
- Ouimette, P., Vogt, D., Wade, M., Tirone, V., Greenbaum, M. A., Kimerling, R., . . . Rosen, C. (2011). Perceived barriers to care among veterans health administration patients with posttraumatic stress disorder. *Psychological Services, 8*, 212-223.
- Pender, D. A., & Prichard, K. K. (2009). ASGW best practice guidelines as a research tool: A comprehensive examination of the critical incident stress debriefing. *Journal for Specialists in Group Work, 34*, 175-192.

- Perrin, M., DiGrande, L., Wheeler, K., Thorpe, L., Farfel, M., & Brackbill, R. (2007). Differences in PTSD prevalence and associated risk factors among World Trade Center disaster rescue and recovery workers. *American Journal of Psychiatry*, *164*, 1385-1394.
- Powers, M. B., Halpern, J. M., Ferenschak, M. P., Gillihan, S. J., & Foa, E. B. (2010). A meta-analytic review of prolonged exposure for posttraumatic stress disorder. *Clinical Psychology Review*, *30*, 635-641.
- Razik, S., Ehring, T., & Emmelkamp, P. M. (2013). Psychological consequences of terrorist attacks: Prevalence and predictors of mental health problems in Pakistani emergency responders. *Psychiatry research*, *207*, 80-85.
- Resick, P. A., Nishith, P., Weaver, T. L., Astin, M. C., & Feuer, C. A. (2002). A comparison of cognitive-processing therapy with prolonged exposure and a waiting condition for the treatment of chronic post-traumatic stress disorder in female rape victims. *Journal of Consulting and Clinical Psychology*, *70*, 867-879.
- Stein, D. J., van der Linden, G. J., & van Balkom, A. J. (2000). Selective serotonin reuptake inhibitors in the treatment of posttraumatic stress disorder: A meta-analysis of randomized controlled trials. *International Clinical Psychopharmacology*, *15*(Suppl. 2), S31-S39.
- Tuckey, M. R. (2007). Issues in the debriefing debate for the emergency services: Moving research outcomes forward. *Clinical Psychology: Science and Practice*, *14*, 106-116.
- Ursano, R. J., McCarroll, J. E., & Fullerton, C. S. (2003). Traumatic death in terrorism and disasters: The effects on posttraumatic stress and behavior. In R. J. Ursano, C. S. Fullerton, & A. E. Norwood (Eds.), *Terrorism and disaster: Individual and community mental health interventions* (pp. 308-332). Cambridge, UK: Cambridge University Press.
- 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: A Practitioner's handbook* (pp. 399-411). New York, NY: Guilford Press.

## Author Biographies

**Lauren L. Golden** graduated from Virginia Tech's clinical psychology doctoral program in May 2013. She currently works for the Department of Veterans Affairs where she specializes in the assessment and treatment of trauma and stressor-related disorders.

**Russell T. Jones**, Ph.D., is a professor of psychology at Virginia Tech and a licensed clinical psychologist. He specializes in clinical child and adult psychology. His major clinical and research interests are trauma psychology and issues related to mass violence as well as technological and natural disasters. Particular topics of study include Posttraumatic Stress Disorder and its comorbidities, post-traumatic growth, and traumatic brain injuries.

**Katharine Donlon** is a doctoral student at Virginia Tech whose research and clinical interests focus on the psychological sequelae of traumatic events. In particular, she is interested in how disasters and medical traumas affect adults' and children's long-term functioning.