ORIGINAL RESEARCH

# Disaster and Terrorism: Cognitive-Behavioral Interventions

**Robyn D. Walser, PhD;[1] Josef I. Ruzek, PhD;[1] Amy E. Naugle, PhD;[2] Christine Padesky, PhD;[3] Diana M. Ronell, PhD;[4] Ken Ruggiero, PhD[5]**

1. National Center for Post-Traumatic Stress Disorder, Veterans Administration Palo Alto Health Care System, Menlo Park, California USA
2. Western Michigan University Kalamazoo, Michigan USA
3. Center for Cognitive Therapy Huntington Beach, California USA
4. Massachusetts General Hospital, Boston, Massachusetts USA
5. Medical University South Carolina, Charleston, South Carolina USA

**Correspondence:**
Robyn D. Walser, PhD
VA Palo Alto Health Care System
795 Willow Road
Mail Code 334 MPD
Menlo Park, CA 94025 USA
E-mail: Robyn.Walser@med.va.gov

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**Abbreviations:**
ASD = Acute Stress Disorder
CAPS = Clinician-Administered PTSD Scale
CBT = Cognitive Behavioral Therapy
CT = Cognitive Therapy
DTS = Davidson Trauma Scale
GAD = Generalized Anxiety Disorder
IES = Impact of Events Scale
MDE = Major Depressive Episode
PD = Panic Disorder
PSS-SR = Post-Traumatic Stress Disorder Symptom Scale
PTSD = Post-Traumatic Stress Disorder
SCID = Structured Clinical Interview for DSM-IV-PTSD
SD = Systematic Desensitization
TSQ = Trauma Screening Questionnaire

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**Abstract**
The mental health effects of disaster and terrorism have moved to the forefront in the recent past following the events of 11 September 2001 in the United States. Although there has been a protracted history by mental health researchers and practitioners to study, understand, prevent, and treat mental health problems arising as a result of disasters and terrorism, there still is much to learn about the effects and treatment of trauma. Continued communication among disaster workers, first-response medical personnel, and mental health professionals is part of this process. This paper outlines current knowledge regarding the psychological effects of trauma and best cognitive-behavioral practices used to treat trauma reactions. More specifically, the information presented is a summary of Cognitive-Behavioral Therapy (CBT) interventions that are relevant for responding to and dealing with the aftermath of disasters.

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## Introduction

Much progress has been made in understanding the affective, cognitive, and behavioral impact of trauma as well as in developing effective psychosocial interventions to address these effects. The significant social and economic impact following the terrorist attacks in the United States on 11 September 2001 have drawn attention to the importance of disseminating the latest information about the aftermath of trauma to medical and non-mental health professionals who encounter victims affected by terrorism or disaster. Understanding the potential mental health effects of disaster and terrorism as well as how to effectively treat these effects is essential. The first encounter many victims of trauma have following a catastrophic event is with medical professionals and non-mental health disaster workers. These encounters are largely designed to triage and treat physical injuries and meet the immediate needs of trauma survivors. What may not be as readily apparent to medical professionals is that while many trauma survivors may require medical care, there are a number of individuals who present to emergency and hospital settings with psychiatric rather than physical needs. For example, 78% of 1,000 people presenting for medical care following a missile attack in Israel were psychiatric and behavior casualties.[1] In addition, the acute demand for medical care following the 1995 Aum Shinrikyo sarin gas attacks in Tokyo primarily consisted of individuals who had no signs of exposure to the gas, but believed that they had been poisoned.[2]

Most individuals who recently have experienced disaster or terrorism exhibit a number of psychological and emotional responses to the event, and for



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some individuals the subsequent psychological consequences may be long-standing. The existing research and clinical literature on trauma-related mental health issues provides valuable information for medical personnel, disaster workers, and mental health workers who are dealing with the impact of trauma related to the attacks of 11 September 2001, or to other disasters and acts of terrorism. Following a brief discussion of the psychosocial effects of trauma, the primary goal of this paper is to provide an overview of cognitive-behavioral strategies for treating acute stress reactions, post-traumatic stress disorder (PTSD), and other longer standing responses to disaster-related trauma.

## The Psychosocial Impact of Disaster and Terrorism

The risk of exposure to a traumatic event is relatively high. In the National Comorbidity Study, Kessler and colleagues found that nearly 50% of American women and 60% of American men had experienced a traumatic event.[3] The Detroit Area Survey found that 75% of individuals were exposed to some event in their lifetime that met the stressor criterion for post-traumatic stress disorder (PTSD).[4] While most individuals who experience a traumatic event will recover and adjust without long-term problems,[5] a proportion of the survivors will go on to develop significant impairment in psychological functioning. For example, in a study conducted by Breslau and colleagues,[6] the lifetime prevalence rate for PTSD in the general population following traumatic exposure is 9%, with a diagnosis of chronic PTSD of 3.4%.[6]

There are many varied and common reactions to traumatic events. Individuals exposed to a trauma often experience a number of difficult emotional and psychological reactions.[7,8] Many normal reactions to trauma include initial shock and disbelief that may be followed by strong emotions of loss and grief. The overwhelming results of disaster often bring about intense emotional experiences such as crying, feelings of sadness and depression, a sense of hopelessness, and feeling as if one cannot continue to function under such conditions. Other common reactions include fear, anxiety, inability to concentrate, sleep disturbance, irritability or anger, general distress, and a re-experiencing of the event such as with nightmares, dwelling on the event, and intrusive or obsessive thoughts. Many of these experiences are common reactions to trauma, and for most people, these feelings will abate within a period of time. It is important to remember, also, that acknowledgment or presence of these symptoms does not necessarily indicate psychopathology. People respond differently depending on the length of distress and their capacity to cope.[5]

## Risk Factors Associated with Post-Disaster Psychosocial Functioning

A number of psychosocial risk factors predispose individuals exposed to disaster and terrorism to on-going psychological problems.[5] For instance, a history of prior traumatic exposure in childhood,[9] pre-existing psychiatric disorders or family history of psychiatric disorders,[10–12] high levels of arousal (restlessness, fatigue, agitation) that interfere with return to daily routine, and traumatic grief may all contribute to a decrease in psychological functioning following a trauma.[13,14]

In addition, impact of disaster and terrorism is linked to multiple other environmental and psychological domains. In their review of 160 articles describing 120 distinct post-disaster samples, Norris *et al* found that psychosocial resource loss, chronic problems in living, psychological problems (e.g., depression and PTSD), non-specific distress, and health concerns largely influence the psychosocial outcome of disaster.[15] These outcome domains are inter-related in the sense that risk for difficulties in psychological functioning is increased when other factors, such as resource loss and health problems, are present. Rubonis and Bickman noted that the most severe and widespread psychological effects tend to occur as a result of disasters for which at least two of the following four environmental factors are present: (1) widespread property damage; (2) serious financial problems; (3) human intent; and (4) considerable loss of life.[16] Studies also have indicated that the general availability of social support may contribute to post-disaster functioning.[17]

Following the terrorist attacks of 11 September 2001, Galea *et al* examined several environmental factors in relation to the past-month psychological outcomes of PTSD and major depressive episode (MDE).[17] Results revealed that: (1) PTSD was nearly six times more likely to be diagnosed among respondents who lost possessions vs. not losing possessions as a result of the attacks; (2) PTSD was three times more likely to be diagnosed among respondents living in close proximity vs. not living in close proximity to the attack site; (3) PTSD and MDE were both several times more likely to be diagnosed among respondents who encountered additional stressors vs. did not encounter additional stressors during the previous 12 months; (4) a MDE was more than two times as likely to be diagnosed among respondents reporting low versus high levels of social support; (5) a MDE was more than two times as likely to be diagnosed among respondents who had a friend or relative killed versus not killed in the attacks; and (6) a MDE was roughly three times more likely to be diagnosed among respondents who lost their job versus those who did not lose their job as a result of the attacks. When evaluating functioning, assessing for these factors may prove useful in identifying at risk trauma survivors.

As noted, a family of long-term, post-traumatic psychological and social complications may affect functioning and require assessment and treatment. Focusing mainly on the psychological impact, complications can vary in terms of diagnostic categories, but most frequently include depression, the acute stress disorder, and the post-traumatic stress disorder.[7,15] Other post-trauma experiences that may cause on-going struggle include relationship difficulties, self-blame, guilt and shame, excessive alcohol intake, suicidal thoughts, and loss of important beliefs or worldviews.[17–21] For those who experience these problems, social and occupational functioning may be seriously impaired.

Many of these short-term reactions and long-term



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problems following trauma can be lessened or treated using cognitive-behavioral therapy (CBT). CBT clinicians and researchers have developed a large body of knowledge addressing post-trauma experiences. We have chosen to focus largely on acute stress, PTSD, and depression as a larger review is beyond the scope of this paper. However, CBT has been demonstrated to be effective for other psychological problems that may follow disaster such as panic disorder (PD) and generalized anxiety disorder (GAD).[23,24] Cognitive-behavioral therapy can successfully address the non-specific worry associated with GAD and the "catastrophic misinterpretations" of body and mental sensations associated with PD. Additionally, CBT strategies designed to specifically address some of the interpersonal struggles that can follow rape trauma, such as difficulty in trusting others and social withdrawal, have been developed.[25] Beck has developed general models for understanding anger and relationship conflict, and treatment strategies based on this model easily can be adapted for use following trauma or disaster.[26–29] Empirical studies do not point to a single best clinical approach to help substance use problems following trauma, although promising approaches include 12-step programs, CBT treatments, and medications.[30–32] In the following sections of this paper, a number of CBT techniques that may be used to reduce symptoms and distress following disaster will be described, specifically regarding acute stress, PTSD and depression.

## Review of Cognitive-Behavioral Therapy Techniques

*Emergency Stage Intervention*

Immediate response to disaster usually is concerned not with specialist mental health practices, but with pragmatic help and taking first steps to help survivors cope with the situation. First responses focus on protecting survivors from further harm, restoring sense of safety, providing information about the whereabouts of loved ones and reconnecting families, and directing the survivor to relevant services.[33]

Some of what the cognitive-behavioral perspective brings to providers at this stage primarily is conceptual in nature. A basic understanding of the CBT framework can aid providers in the delivery of acute care. First, CBT models of behavior problems view most problems as "maladaptive behaviors" rather than as signs of mental illness or disorder. Many problems are seen as meaningful adaptations to difficult circumstances, which are helpful in some ways, but also may cause additional problems. For example, an increase in alcohol use to cope with disaster may have an immediate effect of helping the survivor feel more relaxed and lessening physiological arousal, but may impair problem-solving ability or exacerbate an existing alcohol problem. The CBT way of thinking is very consistent with the emphasis in conventional models of disaster mental health on avoidance of "pathologization" of acute stress responses.

A second CBT conceptual tool is analyzing problems in terms of specific challenging situations. When post-trauma difficulties can be viewed as specific situations that pose problems, survivors can be helped to plan for and prepare to cope with situations more effectively. Often, simply helping an individual identify what situations are causing distress can lead to more effective problem solving. Take the following two scenarios for example:

1. If a disaster survivor reports difficulty with sleep (a common complaint), then a short assessment about sleep behavior following the trauma can be conducted. If the counselor learns that an individual is engaging in behaviors that are counter-productive to sleep such as watching news clips of the event, reading the paper, or discussing difficult issues related to the event with the family directly before going to bed, then simple problem solving strategies around these issues can be implemented.
2. If a disaster survivor says "I haven't been able to cope with anything in the last three days," he or she can be asked to identify what situations have been difficult to cope with and to identify an upcoming important situation. Counselor and survivor then can plan for the situation, discuss ways of responding and decide on a course of action.

Breaking down these overwhelming tasks into specific goals can reduce feelings of helplessness and make problems seem more manageable. These approaches are similar to "proximal goal setting," in which complex goals are broken down into simple objectives. By setting achievable short-term goals, survivors can begin taking control of their situation and experience success in personal coping efforts.

Cognitive-behavioral models for the development of PTSD provide practitioners with simple ways of making sense of post-trauma anxiety. The "two-factor theory" explains that, via one human learning process, stimuli associated with the disaster trauma can act as reminders for the survivor and elicit intense emotional and physical reactions similar to those that occurred during the worst moments of the disaster itself.[34] Then, in a second learning process, survivors may learn to avoid any situation that acts as a reminder in order to avoid the associated intense anxiety. In this way, survivors gradually may restrict their ability to go about in the world, be with people, and function in their various life roles. In addition, they may avoid talking about their experiences, because such talk acts as an upsetting reminder. Cognitive-behavioral theory holds that this kind of extreme avoidance of cues and reminders can limit the ability of the survivor to come to terms with the experience; it limits opportunity for the kind of gradual reduction in anxiety that can result from facing reminders and traumatic emotions.

It may be useful during this initial stage of care to instruct some survivors in simple versions of CBT anxiety management methods that have been used extensively in the treatment of anxiety disorders.[35] In this approach, individuals are taught a variety of skills for reducing anxiety, including deep breathing and relaxation exercises. In addition to anxiety management, some survivors of a catastrophic event may benefit from working with a counselor to identify several possible ways of responding to a problem situation, and then, selecting and placing into practice the best ideas, an approach that is part of a more systematic approach in formal problem-solving therapy.[36]



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*Acute Stage: Prevention and Intervention of Post-Trauma Symptoms*

As the first days and weeks pass, the potential for application of preventive cognitive-behavioral interventions increases. In terms of research evidence, little is known about effective ways of preventing post-disaster mental health problems such as PTSD. Current thinking regarding best practice would point toward several key goals of early intervention, the achievement of which may in some cases be enhanced by use of cognitive-behavioral methods.

*Motivation Enhancement*

Many disaster survivors, including many of those who develop chronic PTSD and other problems, do not use available mental health counseling services. This is likely due to lack of knowledge regarding their availability, perceived stigma associated with the seeking of mental health services, failure to recognize need for services, and practical obstacles (e.g., transportation). Increasing motivation to seek help and use resources, if appropriate to the survivor, is therefore an important aspect of comprehensive disaster mental health care. Motivational interviewing skills may be especially helpful in this regard. In this approach, counselors help survivors review the pros and cons of seeking counseling and discuss the nature of counseling activities, in a non-confrontational interaction.[37]

*Reduction of Physiological Arousal*

High arousal in the first days following trauma exposure has predicted development of PTSD in some studies.[38] It is possible that successful reduction of arousal during the initial hours, days, or weeks following traumatization will inhibit a variety of processes that lead to chronicity of reactions as CBT often involves significant attention to anxiety management skills. These skills are likely to be especially valued by survivors experiencing medium to high levels of anxiety, and include diaphragmatic breathing, relaxation training, and cognitive self-talk techniques. For those experiencing intense anxiety, distraction (limiting access to media coverage and focusing on non-trauma-related activities of daily life) may prove more useful. At this stage of disaster response, these methods can be used more systematically than during the first few hours and days following the event. This means that survivors can be shown how to use these skills, receive coaching in their application, and, across multiple contacts with helpers, improve their ability to self-manage anxiety.

*Increase in Adaptive Coping*

In addition to identifying and testing central beliefs that maintain difficulties, CBT also includes systematic training of coping skills. Following a disaster, a variety of skills may be helpful including those related to support seeking, support giving, problem solving, and general communication (e.g., listening). Elements of the skills-training approach used in CBT that may be useful include careful specification of the desired behaviors, use of self-monitoring, and social reinforcement of coping efforts. For example, if a disaster counselor were discussing the importance of social support, it would be useful for the counselor to help the survivor identify whom he or she might wish to approach for support, what their likely reaction might be, and what they might wish to say in asking for support. Self-monitoring involves keeping a diary or other forms of recording to track coping efforts. This increases attention to and reflection about coping, and helps the counselor and survivor review coping activities. Social reinforcement involves active encouragement of coping. If permitted by the setting, multiple contacts with a survivor allow ongoing review and shaping of coping skills, along with encouragement for ongoing efforts.

*Reduction of Maladaptive Coping*

Responding to trauma-related problems by increasing some types of coping responses, such as excessive avoidance or alcohol or drug use, is likely to be associated with worse outcomes.[39] Withdrawal from social activities, key roles, and positive recreational activities may block processes that contribute to recovery. Whether these problematic coping methods interfere with natural healing processes, or whether they create additional problems that exacerbate distress, it is possible that their replacement by other coping tools might improve post-trauma recovery. For example, in a study of firefighters involved in rescue and recovery work following the Oklahoma City bombing, alcohol consumption was found to increase.[40] For such individuals, brief interventions designed to reduce alcohol consumption may prove useful.[41] Although they have not been applied or evaluated post-disaster, they have produced significant reduction in alcohol use in recent survivors of trauma seeking help in emergency medical settings.[42]

*Restructuring of Negative Trauma-Related Beliefs*

It is possible that how survivors appraise their experience and the impact on their lives may prolong their distress. Identification and successful challenge of beliefs like "I deserve what happened," or "I can't protect myself from harm," or "I'm going crazy," or "My marriage will be wrecked," may aid in the recovery process. Methods of cognitive therapy used for disorders such as depression have been modified and included in some prominent treatments for PTSD and may be of benefit to disaster survivors.[25,43]

*Facilitation of "Emotion Processing"*

While systematic exploration of trauma-related memories, thoughts, and feelings via exposure therapy is a well-validated procedure for treatment of chronic PTSD, with regard to disaster, it yet is not clear for whom such an approach might be helpful, or harmful, if promoted in the first weeks after an event.[44,45] When post-traumatic stress is accompanied by pronounced dissociative symptoms in the initial weeks following a traumatic or catastrophic event, the diagnosis of acute stress disorder (ASD) is made. Research suggests that people with ASD are likely to benefit from treatment in the first few weeks following a traumatic or catastrophic event. In fact, to date, this is the only well-validated method shown to prevent PTSD and is



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described in detail in Bryant and Harvey.[46–48] In cases of ASD, 5–6 session CBT has been shown to be more effective than supportive counseling.[47,48] The CBT treatment used in these studies focuses on exposure to anxiety-producing thoughts and situations as well as self-talk exercises to manage anxiety. More specifically, the intervention, delivered about two weeks post-trauma, combines elements of treatment that have been used with success in the treatment of chronic PTSD: education, anxiety management training, cognitive restructuring, and imaginal and in vivo exposure. While this method has been successful in reducing both post-traumatic stress symptoms and depression, it has been applied to date with survivors of accident and assault, not of disaster and terrorist events. At present, such an approach cannot be recommended for routine use, but it is likely that it will be developed and studied further, and adapted in the near future for use with carefully selected disaster survivors.

## Secondary Intervention: Treatment of Long-Term Trauma Symptoms

Although most people recover naturally from trauma, the aftermath of trauma for some includes depression; traumatic bereavement; anxiety disorders including PTSD, generalized anxiety disorder (GAD), or panic disorder; substance-related disorders; and/or relationship difficulties. Symptoms related to each of these areas may occur in the weeks immediately following a trauma. Disaster and mental health professionals should be cautious in diagnosing these difficulties until they have persisted for one month or more after the traumatic event. Once identified, fortunately each of these problem areas can be successfully helped with short-term, cognitive-behavioral therapy. A number of these approaches are described below.

### *CBT for Post-traumatic Stress Disorder (PTSD)*

The PTSD is the most common anxiety response to trauma. While many individuals recover naturally from PTSD during the first year following a traumatic event, without intervention, at least one-third still will be symptomatic three years later.[49] Fortunately, treatments of PTSD have become more effective in recent years,[25,50–52] with cognitive-behavioral treatments proving the most consistently effective.[53] While most of the research on CBT for PTSD has focused on individual or small-group trauma (e.g. physical assaults and road traffic accidents) recent research has begun to examine the efficacy of CBT in the aftermath of community-wide traumas and catastrophic events.

### *Brief Screening and Assessment of PTSD Symptoms*

In the wake of disaster, brief, formal screening devices that can be self-administered without the aid of a psychologist are most useful. These instruments should also be short in length, simple to answer (yes/no), clearly written, and in the appropriate language. The purpose of the screening device should be readily detected by the reader and easily scored by non-professionals.[54] Most screening devices are used one week to one month post-trauma in an effort to avoid false positives. The screening instrument needs to have simple decision rules so that in the face of the ongoing response, it is easy to interpret who is at risk and who is not.

A number of brief, self-screening instruments currently are in various stages of evaluation. One particularly promising instrument is the Trauma Screening Questionnaire (TSQ).[54] This assessment tool contains a subset of the Post Traumatic Stress Disorder Symptom Scale (PSS-SR) that may achieve results equivalent to the highly regarded clinician administered Structured Clinical Interview for DSM-IV-PTSD module (SCID) and the Clinician-Administered PTSD Scale (CAPS-1).[55–57] Among other instruments, a subset of the Impact of Events Scale (IES) has shown quality results as a self-report screen for predicting the development of PTSD and the Startle, Physiological arousal, Anger, and Numbness scale (SPAN), a four-item scale for brief screening of PTSD, is promising as a symptom-screening instrument.[13,58,59] The latter assesses responses on four scales (startle, physiological arousal, anger and numbness) based on the longer Davidson Trauma Scale (DTS). Shalev suggests cut-off points for individuals who confidently can be assumed will not develop PTSD, for those who are at risk and need to be followed, and for those on the border and who may require more attention depending upon resources for treatment and availability of a clinician to administer an instrument such as the CAPS or SCID.[13]

Further development is needed for robust, short, self-screening devices that have been tested on large samples using consistent criteria and that have been validated for use in disaster and terrorism. These instruments also should be standardized for age, gender, language, and cultural relevance. Interestingly enough, research seems to indicate that repeated assessment itself may have a positive impact on reducing PTSD response. When practical, trauma survivors should be assessed with regard to these issues to aid in referrals, decision-making, and intervention.[60]

### *Exposure-Based Interventions for PTSD*

Exposure-based treatments perhaps are the most widely used form of secondary intervention for PTSD and other forms of trauma-related fear and distress.[61,62] There is not one universally agreed upon way to conduct exposure-based treatments. Rather, several different versions of treatment have been used and studied, all of which have the common (and effective) element of direct therapeutic exposure. Three of the most commonly used versions are: (1) prolonged exposure; (2) graduated exposure; and (3) systematic desensitization.

### *Prolonged Exposure*

Several well-controlled group-design treatment-outcome studies have supported the efficacy of prolonged exposure.[61–63] Prolonged Exposure (PE), also commonly referred to as "flooding" or "implosion" (similar varieties of direct therapeutic exposure), is characterized by prolonged and repeated exposure (imaginal or direct exposure) to reminders of a traumatic experience. A hallmark feature of PTSD is the fear that victims experience in response to realistically non-



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dangerous cues that were present at the time of their victimization. For example, in the hours and days immediately following the terrorist attacks of 11 September 2001 it is likely that many New York residents experienced an increase in physiological arousal upon hearing an airplane fly overhead. Similarly, a child who witnesses a murder in his/her typically very safe neighborhood subsequently may avoid leaving his/her house to play with friends in the neighborhood despite other evidence that it is safe. Such realistically non-dangerous reminders are the focus of treatments that include an exposure component. The use of repeated and prolonged exposures to these reminders works rapidly to "extinguish" over time, the physiological and other emotional reactions victims have in response to these reminders. The effectiveness of prolonged exposure tends to be greatest when these exercises are done in natural settings rather than in office-based settings, particularly when they can be provided in a setting that closely resembles that in which the victimization occurred.

*Graduated Exposure*

Research on exposure-based interventions also has strongly supported the use of a graduated-exposure approach.[65,67] Graduated Exposure (GE) is similar to prolonged exposure in that repeated exposure to realistically non-dangerous cues is a central focus. However, whereas prolonged exposure is designed to rapidly reduce fearful reactions by emphasizing repeated exposure to reminders that were most salient during the patients' victimization experiences, graduated exposure is designed to gradually expose patients to reminders that are increasingly more salient as treatment progresses. Proponents of graduated exposure recognize that some patients may prematurely drop out of prolonged exposure treatment if they do not tolerate the intensity of the prolonged exposure approach well. Although most adult patients do tolerate prolonged exposure well, it is quite common for treatment providers to use graduated exposure instead of prolonged exposure when working with child or adolescent victims. During graduated exposure, patients are usually asked to rate several selected reminders on a scale from "least to most fearful." Graduated exposure then progresses along this hierarchy at a pace that depends on patients' degree of responsiveness on lower levels of the hierarchy.

*Systematic Desensitization*

Several studies have supported the effectiveness of systematic desensitization in reducing trauma-related fear.[68,69] In fact, systematic desensitization (SD) was one of the first exposure-based interventions to be supported by research. Based on Wolpe's principle of "reciprocal inhibition," systematic desensitization resembles graduated exposure in its gradual approach to exposure along a fear hierarchy, but differs from both graduated exposure and prolonged exposure by adding procedures that produce physiological reactions that are incompatible with fear and anxiety.[70] For example, instead of expecting that fear will decrease naturally when repeatedly exposed to a traumatic reminder, a patient may be asked to perform muscle relaxation exercises while being exposed to a traumatic reminder. Proponents of systematic desensitization theorize that relaxation and accompanying physiological reactions "compete" with fearful reactions. Other researchers argue that exposure is the active component of systematic desensitization and the only necessary condition for anxiety reduction.[71]

*CBT Methods Applied to Terrorism-Related PTSD*

One of the most promising CBT approaches was tested in a community study following a terrorist bombing in Omagh, Northern Ireland in 1998 in which 29 people were killed and more than 370 were injured.[72,73] The intervention was found to be effective in treating those who were physically injured, those who were witnesses to the bombing, and the emergency personnel who cared for the injured in the hospital. The Ehlers and Clark CBT model for PTSD helps clients: (1) identify and test problematic beliefs about the long-term effects of trauma and personal symptoms experienced post-trauma; (2) organize and complete the trauma memory in order to integrate it into one's life; and (3) overcome the avoidance, safety behaviors, and ruminations that prevent memory elaboration, exacerbate symptoms, and interfere with reappraisals of beliefs.[72] Overcoming avoidance, safety behaviors, and ruminations also help clients "reclaim" their lives by resuming activities that were common pre-trauma.[72]

Part of the CBT therapy process involves imaginal "reliving" of the traumatic event. Unlike reliving in therapies based on exposure, the reliving is not repeated in each session, but occurs in less than half of the therapy sessions.[50] In the Ehlers and Clark model, reliving is a way to access problematic beliefs and images in order to reveal and restructure meanings and memory fragments that are thought to maintain PTSD. Identification of emotional "hotspots" during reliving followed by: (1) cognitive restructuring of the meanings associated with these hotspots; and (2) reinsertion of these restructured meanings within subsequent reliving in therapy may greatly improve the efficacy of PTSD treatment.[74]

One interesting finding of the Omagh study was that cognitive factors might be better predictors of chronic PTSD than other factors examined in previous analyses of risk for developing PTSD. After the Omagh bombing, cognitive factors (negative view of the symptoms/self and rumination following the bombing) were associated most strongly with subsequent development of PTSD. These data are consistent with Ehlers and Clark's cognitive model that natural recovery from PTSD is impeded by negative beliefs about post-trauma symptoms, avoidance/safety behaviors, and rumination about the trauma and surrounding events.[72] New evidence on the importance of cognitions in the development and maintenance of PTSD may explain why CBT is more effective than is supportive counseling or critical incident stress debriefing,[75] other interventions commonly used following disasters.



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## CBT for Bereavement and Depression

It is important to distinguish between bereavement and depression following trauma because bereavement can take a year or more to resolve and generally is considered a healthy human reaction to loss; depression may resolve naturally over time, but it is not an adaptive human reaction. Both depression and bereavement can be characterized by low mood and disinterest in normal activities. It is the content of predominant thoughts that helps us distinguish between them.

A grieving person thinks about what/who has been lost and may (temporarily) think that life without those missing pieces lacks meaning. Depression is characterized by a pervasive negative cognitive bias, reflected in the "negative cognitive triad": (1) negative thoughts about the world ("My life is ruined"); (2) one's self ("It is all my fault. I am a failure/stupid/unlovable"); and (3) the future ("It will never get better").[76] Thus, while bereaved and depressed persons both think about loss, bereavement is not characterized by the extreme negativity (self-criticism, pessimism, and hopelessness) found in depression.

### *Bereavement*

Bereavement following trauma usually does not require therapy. However, sometimes people experience "traumatic grief" that can significantly slow natural recovery from bereavement.[77] Post-trauma, a bereaved person may express unremitting survivor's guilt or excessive self-blame for the loss. For example, some survivors of trauma who have lost family members or other loved ones feel responsible for their deaths and/or think, "I should have died in their place." They may ruminate over decisions they made linked to the traumatic event. In these cases, cognitive therapy can help identify and test the thoughts and images that prevent resolution of grief.[78]

Violent deaths can lead to traumatic bereavement in which images of the violent death (remembered or imagined) need to be processed using methods similar to those described in the preceding section on PTSD. Sometimes the bereaved, directly or indirectly, are responsible for the deaths of others. In these cases, cognitive therapy can help adaptively address guilt, including evaluation of responsibility and reconciliation with oneself and sometimes others.

### *Depression*

Depression often is episodic and the risk of relapse is higher when the depression is secondary to PTSD.[79,80] In addition, comorbid depression may increase the risk of prolonged PTSD.[38] Thus, if someone is experiencing major depression for six to eight weeks following a traumatic event, it is reasonable to suggest treatment.

In choosing among treatments for depression, the likelihood of relapse is an important consideration. The majority of people who experience major depression experience at least one relapse in their lifetime, and people who experience major depression experience, on average, four lifetime episodes.[81] The most common treatment employed for depression is antidepressant medication, and yet, treatment with antidepressants alone is linked to very high rates of relapse. Within one year of medication discontinuation, 60% of depressed patients relapse.[82] For this reason, depression often is treated with medication for long periods of time; continuation of medication and/or the addition of cognitive therapy (CT) or interpersonal therapy to medication can reduce these relapse rates by half.[83]

In contrast, only 30% of people treated with cognitive therapy for depression relapse in the year following treatment.[82] A recent study by Jarrett *et al* found that relapse rates decreased to 10% at two years post-therapy when eight booster sessions (spread out over 8–10 months) were added to the successful completion of a usual course (12–20 sessions) of CT for depression.[84]

### *Cognitive Therapy for Depression*

Cognitive therapy may achieve lower relapse rates than medication because it teaches people specific skills designed to reduce depression.[85] In the first few sessions, a client charts current activities to learn what behaviors are linked to mood improvement and to help plan increased involvement in activities associated with pleasure and mastery (an abbreviated version of behavioral activation is described in detail in the next section). Later sessions focus on development of skills thought to be central for relapse reduction: identification and testing of the negative thoughts that maintain depression, improvement in problem-solving skills, and development of long-term relapse prevention strategies.[43,86] Each skill is honed through structured learning exercises that the client practices in and between therapy sessions.

For example, a person who becomes depressed following a traumatic event, may begin to think, "Nothing I do will make a difference" and "Everything I value is now lost. Life is not worth living anymore." These thoughts can fuel hopelessness, inactivity, and even suicidal intent. Through guided discovery, the therapist helps the client explore these thoughts using evidence from his or her life.[43,87] The client is asked to recall and learn from times he or she did handle seemingly overwhelming problems. Shifts in perspectives may occur when the client considers what advice he or she would give others in similar circumstances, or what lost loved ones would want him or her to do. The client is urged to consider what valued people, experiences, or meanings remain post-disaster or could be rebuilt. During guided discovery, clients learn to question depressive, automatic, negative thoughts and write down relevant information on a worksheet called a "thought record".[86] Thought records help depressed people learn to counter the negative cognitive biases that accompany depression and replace these with more balanced thinking patterns that contribute to improvements in affect, motivation, and behavior.

In addition to thought testing, cognitive therapy helps depressed clients learn to actively solve problems by breaking problems into their component parts and taking small steps toward improvement. As therapy progresses, clients identify and test underlying assumptions and core beliefs that can predispose them to future depression episodes. Testing these deeply held beliefs may involve behavioral experiments to test assumptions. For example, a woman



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who believed she could not handle decisions without her husband's help might do a series of experiments to test this belief following her husband's death in a disaster. There is some evidence that CT for depression may be effective in group therapy, and also in educational classes that teach depressed people to use a CT self-help manual.[77,86,88,89] These group formats might be useful for evaluation following large-scale traumatic events if individual services are not available.

*Behavioral Interventions for Depression*

In recent years, purely behavioral treatments for clinical depression have gained more research support and attention.[90] Recently developed behavioral treatments for depression typically have included a common component: Behavioral Activation (BA). The tenets underlying behavioral activation view depression as a consequence of reduced access to reinforcement following changes in an individual's life circumstances. Following a traumatic event, a person may stop engaging in activities they previously enjoyed, limit social interactions, and engage in other avoidance behaviors that limit contact with potential reinforcers.[92] The primary focus of behavioral activation is simple: to increase the frequency with which patients engage in healthy and pleasurable activities.

Based on this underlying conceptualization and goal, the overall purposes of behavioral activation treatment for depression are to: (1) determine the life circumstances that precipitated the depressive symptoms; (2) determine the coping patterns that exacerbated the depressive symptoms; and (3) develop a treatment plan for improving the coping strategies and providing access to more reinforcing life circumstances.[92] Treatment packages for BA have been developed to guide the assessment process as well as the selection of healthy activities, and research has suggested that these treatments are effective.[92–96]

In an 8–15-session BA treatment for depression, initial sessions consist of introducing the treatment rationale, establishing rapport, and assessing depressed behavior and the environmental antecedents and consequences for such behavior.[92] A systematic activation approach then begins during which the frequency of reinforcing life events is increased. Patients self-monitor their daily activities, review with clinicians the quality and quantity of his/her activities, and generate ideas about activities in which to engage during treatment. The emphasis then shifts to identifying behavioral goals within major life areas that include relationships, education, employment, hobbies and recreational activities, physical/health issues, spirituality, and anxiety-eliciting situations.[97] Using other structured procedures, clinicians then guide the patients through weekly behavioral checkouts in which patients gradually increase the frequency with which they engage in 10–15 selected activities along a hierarchy ranging from "easiest" to "most difficult" to accomplish. Further, patients identify weekly rewards as incentives for completing the behavioral checkout that they self-administer if their goals are met.

## Conclusion

Medical professionals and non-mental health disaster professionals are the front line for treating the victims of a disaster. In many ways, these professionals and individuals can function as leaders and models for appropriate and normal reactions to extraordinary circumstances. Modeling compassion and empathy, answering questions, sharing information, resources, and even emotional vulnerability during the initial days following trauma may help to normalize the event, reduce suffering, and pave the way for a less problematic future. Front-line professionals also are critical for identifying survivors who may need psychological intervention and/or on-going treatment and support. While most trauma survivors display a range of PTSD reactions in the initial aftermath of a disaster, most adapt after an interval of several months.[98,99] Yet, being able to identify which individuals may go on to develop chronic, persistent, and debilitating PTSD is an important triage function.

Experience has shown that survivors of mass disasters typically do not turn to mental health workers for they have other more critical survival-related priorities, and often turn, instead, to the support of family and community networks for healing.[100] Furthermore, some individuals may not want to see themselves as victims, to be pathologized or labeled with a mental illness diagnosis, and consequently may avoid mental health workers. Or, quite simply, mental health professionals may not be available (particularly in rural or non-Western settings) or culturally acceptable. Therefore, medical and non-mental health professionals may play an important role in identifying those at risk and in need of early psychological intervention. With planning and collaboration, and if acceptable to the trauma victim, significant reduction of PTSD response and other symptoms may be achieved through cognitive behavioral therapies and interventions.[101] Cognitive behavioral therapy has been found to be an effective intervention to prevent the development of chronic PTSD, and even may be applied successfully by non-experts, as in the case of trauma-focused cognitive therapy.[47,49] Cognitive behavioral therapy has much to offer in the prevention and treatment of post-disaster and terrorism responses. There is a need for continued research efforts and collaborative work to formulate the best CBT practices following trauma, and to enhance our efforts in dealing with the aftermath of these life-changing and overwhelming events.

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