

Effects of Traumatic Stress after Mass Violence, Terror or Disaster

Normal Reactions to an Abnormal Situation

It is important to help survivors recognize the normalcy of most stress reactions to disaster. Mild to moderate stress reactions in the emergency and early post-impact phases of disaster are highly prevalent because survivors (and their families, community members and rescue workers) accurately recognize the grave danger in disaster (Young et al., 1998). Although stress reactions may seem 'extreme', and cause distress, they generally do not become chronic problems. Most people recover fully from even moderate stress reactions within 6 to 16 months (Baum & Fleming, 1993; Green et al., 1994; La Greca et al., 1996; Steinglass & Gerrity, 1990). (From Disaster Mental Health Response Handbook, NSW Health, 2000, p. 27.)

In fact, resilience is probably the most common observation after all disasters. In addition, the effects of traumatic events are not always bad. Although many survivors of the 1974 tornado in Xenia, Ohio, experienced psychological distress, the majority described positive outcomes: they learned that they could handle crises effectively, and felt that they were better off for having met this type of challenge (Quarantelli, 1985). Disaster may also bring a community closer together or reorient an individual to new priorities, goals or values. This concept has been referred to as 'posttraumatic growth' by some authors (e.g., Calhoun, 2000), and is similar to the 'benefited response' reported in the combat trauma literature (Ursano et al., 1996). (From Disaster Mental Health Response Handbook, p. 27.)

There are a number of possible reactions to a traumatic situation that are considered within the norm for individuals experiencing traumatic stress.

Common Traumatic Stress Reactions (modified from Disaster Mental Health Response Handbook, p. 28)

Emotional Effects

- shock
- terror
- irritability
- blame
- anger
- guilt

Cognitive Effects

- impaired concentration
- impaired decision making ability
- memory impairment
- disbelief
- confusion
- nightmares

- grief or sadness
- emotional numbing
- helplessness
- loss of pleasure derived from familiar activities
- difficulty feeling happy
- difficulty experiencing loving feelings
- decreased self-esteem
- decreased self-efficacy
- self-blame
- intrusive thoughts/memories
- worry
- dissociation (e.g., tunnel vision, dreamlike or "spacey" feeling)

Physical Effects

- fatigue, exhaustion
- insomnia
- cardiovascular strain
- startle response
- hyper-arousal
- increased physical pain
- reduced immune response
- headaches
- gastrointestinal upset
- decreased appetite
- decreased libido
- vulnerability to illness

Interpersonal Effects

- increased relational conflict
- social withdrawal
- reduced relational intimacy
- alienation
- impaired work performance
- impaired school performance
- decreased satisfaction
- distrust
- externalization of blame
- externalization of vulnerability
- feeling abandoned/rejected
- overprotectiveness

Although many of the above reactions seem negative, it must be emphasized that people also show a number of positive responses in the aftermath of disaster. These include resilience and coping, altruism, e.g., helping save or comfort others, relief and elation at surviving disaster, sense of excitement and greater self-worth, changes in the way they view the future, and feelings of "learning about one's strengths" and "growing" from the experience (Disaster Mental Health Response Handbook, p. 28).

Problematic Stress Responses

The following responses are less common and indicate that the individual will likely need assistance from a medical or mental-health professional:

- Severe dissociation (feeling as if the world is unreal, not feeling connected to one's own body, losing one's sense of identity or taking on a new identity, amnesia)
- Severe intrusive re-experiencing (flashbacks, terrifying screen memories or nightmares, repetitive automatic reenactment)
- Extreme avoidance (agoraphobic-like social or vocational withdrawal, compulsive avoidance)
- Severe hyper-arousal (panic episodes, terrifying nightmares, difficulty controlling violent impulses, inability to concentrate)

- Debilitating anxiety (ruminative worry, severe phobias, unshakeable obsessions, paralyzing nervousness, fear of losing control/going crazy)
- Severe depression (lack of pleasure in life, feelings of worthlessness, self-blame, dependency, early wakenings)
- Problematic substance use (abuse or dependency, self-medication)
- Psychotic symptoms (delusions, hallucinations, bizarre thoughts or images)

Some people will be more affected by a traumatic event for a longer period of time than others, depending on the nature of the event and the nature of the individual who experienced the event. One of the most debilitating effects of traumatic stress is a condition known as Posttraumatic Stress Disorder (PTSD). The current trauma literature suggests that many factors are related to the increased or decreased risk for PTSD. The likelihood of developing PTSD and the severity and chronicity of symptoms experienced is a function of many variables, the most important being exposure to a traumatic event. It is therefore important to bear in mind that, even among vulnerable individuals, PTSD would not exist *without* exposure to a traumatic event.

Symptoms of PTSD

Posttraumatic Stress Disorder (PTSD) is a mental disorder resulting from exposure to an extreme, traumatic stressor. PTSD has a number of unique defining features and diagnostic criteria, as published in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV, 1994). These criteria include:

- Exposure to a traumatic stressor
- Re-experiencing symptoms
- Avoidance and numbing symptoms
- Symptoms of increased arousal
- Duration of at least one month
- Significant distress or impairment of functioning

Exposure to a traumatic stressor (Criterion A)

To be diagnosed with PTSD, the person must have been exposed to a traumatic event in which both of the following were present:

the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury or a threat to the physical integrity of self or others; and

the person's response to the trauma involved intense fear, helplessness, or horror. (In children, this may be expressed by disorganized or agitated behavior.)

Stressful events of daily life that do not meet these conditions include divorce and financial crises, which

may lead to adjustment problems but are not sufficient to satisfy the criterion for a traumatic event (i.e., Criterion A) for PTSD.

Qualifying stressors must induce an intense emotional response. According to DSM-IV, a qualifying stressor must not only be threatening, but it must also induce a response involving intense fear, helplessness, or horror. Some severely traumatized individuals may dissociate during a stressor or have a blunted response due to defensive avoidance and numbing. Often, the intense emotional response to the stressor may not occur until considerable time has elapsed after the incident has terminated.

Re-experiencing symptoms

One set of PTSD symptoms involves persistent and distressing re-experiencing of the traumatic event in one or more ways. With these symptoms, the trauma comes back to the PTSD sufferer through memories, dreams, or distress in response to reminders of the trauma. An extreme example of this is flashbacks, where individuals feel as if they are reliving the traumatic experience. This is a severe, less common re-experiencing symptom. PTSD is distinguished from normal remembering of past events by the fact that re-experiencing memories of the trauma(s) are unwanted, occur involuntarily, elicit distressing emotions, and disrupt the individual's functioning and quality of life.

Avoidance and numbing symptoms

Another set of PTSD symptoms involves the numbing of general responsiveness and the persistent avoidance of stimuli associated with the trauma. These symptoms involve avoiding reminders of the trauma. Reminders can be internal cues, such as thoughts or feelings about the trauma, and external stimuli in the environment that spark unpleasant memories and feelings. To this limited extent, PTSD is not unlike a phobia, where the individual goes to considerable length to avoid stimuli that provoke emotional distress. PTSD symptoms also involve general symptoms of impairment, such as pervasive emotional numbness, feeling out of sync with others, and not expecting future goals to be met.

Symptoms of increased arousal

Symptoms of increased arousal include difficulty falling or staying asleep, irritability or outbursts of anger, difficulty concentrating, hyper-vigilant watchfulness, and an exaggerated startle response. Individuals suffering from PTSD experience heightened physiological activation, which may occur in a general way even while at rest. More typically, this activation is evident as excessive reactions to specific stressors that are directly or symbolically reminiscent of the trauma. This set of symptoms is often linked to reliving the traumatic event. For example, sleep disturbance may be caused by nightmares, intrusive memories may interfere with concentration, and excessive watchfulness may reflect concerns about preventing the occurrence of a traumatic event similar to the previous trauma.

Required duration of symptoms

For a diagnosis of PTSD to be made, **the symptoms must endure for at least one month.**

PTSD symptoms must be clinically significant

PTSD symptoms must cause clinically significant *distress* or *impairment* in social, occupational, or other important areas of functioning. Some individuals may experience a great deal of subjective discomfort and suffering owing to their PTSD symptoms without displaying conspicuous impairment in their day-to-day functioning. Other individuals show clear impairment in one or more spheres of functioning, such as social relating, work efficiency, or ability to engage in and enjoy recreational or leisure activities.

Symptoms of Acute Stress Disorder (ASD)

For some trauma survivors, acute stress reactions are severe enough to meet DSM-IV criteria for Acute Stress Disorder (ASD). A growing body of evidence suggests that there are specific stress symptoms that may occur almost immediately following a traumatic event that may predict the development of PTSD (see review by Koopman, Classen, Cardena & Spiegel, 1995). The observation of acute stress reactions in these and other studies of natural and human-caused disasters led to the formation of the Acute Stress Disorder (ASD) diagnosis in the Diagnostic and Statistical Manual, Fourth Edition. Acute Stress Disorder is conceptually similar to PTSD and shares many of the same symptoms. Diagnostic criteria include dissociative (emotional numbness, feeling "unreal" or disconnected from emotions or the environment), intrusive, avoidance, and arousal symptoms. To meet a diagnosis of ASD, symptoms must occur between 2 days and 4 weeks after a traumatic experience. After 4 weeks, a PTSD diagnosis should be considered (Bryant & Harvey, 1997).

Who develops Acute Stress Disorder and Posttraumatic Stress Disorder?

The percentage of those exposed to traumatic stressors who then develop Posttraumatic Stress Disorder (PTSD) can vary depending on the nature of the trauma. At the time of a traumatic event, many people feel overwhelmed with fear; others feel numb or disconnected. **Most trauma survivors will be upset for several weeks following an event but will recover to a variable degree without treatment.** The percentage of trauma victims that will continue to have problems and develop Posttraumatic Stress Disorder will depend on many factors, including the severity of trauma exposure.

In research on disasters, prevalence rates have been:

Natural disaster	4-5%
Bombing	34%
Plane crash into hotel	29%
Mass shooting	28%

The following types of exposure place survivors at high risk for a range of postdisaster problems:

- Exposure to mass destruction or death
- Toxic contamination
- Sudden or violent death of a loved one
- Loss of home or community

The rates of Acute Stress Disorder (as cited in Bryant, 2000) following traumatic incidents vary, with higher rates reported for human-caused trauma.

Typhoon	7%
Industrial accident	6%
Mass shooting	33%
Violent assault	19%
MVA	14%
Assault, burn, indust.	13%

Given that an individual must be exposed to a traumatic event in order to develop PTSD, other risk factors that have been shown to contribute to the development of PTSD include magnitude, duration, and type of traumatic exposure. Variables such as earlier age when exposed to the trauma and a lower level of education are also associated with increased risk for developing PTSD. Additional factors related to vulnerability for developing PTSD include: severity of initial reaction; peri-traumatic dissociation (i.e., feeling numb and having a sense of unreality during and shortly following a trauma); early conduct problems; childhood adversity; family history of psychiatric disorder; poor social support after a trauma; and personality traits such as hypersensitivity, pessimism, and negative reactions to stressors. Women are more likely to develop PTSD than men, independent of exposure type and level of stressor, and a history of depression in women increases the vulnerability for developing PTSD (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Breslau, 1990; Kulka et al., 1990). While exposure to a traumatic event may result in an increased vulnerability to subsequent traumas, several studies have also reported that exposure to trauma can have a stress inoculation effect and can strengthen an individual's protective factors. This is because the individual has gained experience in successfully mastering traumatic events (Ursano, Grieger, & McCarroll, 1996).

Several factors present in the acute-phase recovery environment of a disaster have been found to aggravate stress reactions and therefore increase survivors' risk of developing negative outcomes (Emergency Management Australia, 1999). (From Disaster Mental Health Response Handbook, p. 36). These include:

- Lack of emotional and social support
- Presence of other stressors such as fatigue, cold, hunger, fear, uncertainty, loss, dislocation, and other psychologically stressful experiences
- Difficulties at the scene
- Lack of information about the nature and reasons for the event
- Lack of, or interference with, self-determination and self-management
- Treatment [given] in an authoritarian or impersonal manner
- Lack of follow-up support in the weeks following the exposure

Protective factors that may mitigate negative effects include:

- Social support
- Higher income and education
- Successful mastery of past disasters and traumatic events
- Limitation or reduction of exposure to any of the aggravating factors listed above
- Provision of information about expectations and availability of recovery services
- Care, concern and understanding on the part of the recovery services personnel
- Provision of regular and appropriate information concerning the emergency and reasons for action

Finally, community-related mediators that may help alleviate distress are rapid disaster relief and a positive community response that does not single out certain survivors as victims (Solomon et al., 1993).

Studies show that while there is no singular pattern of psychological consequences to disasters, typically the very early responses following disaster impact will be similar for both natural and human-made disasters (Burkle, 1996). However, the persistence of responses may differentiate the two. The effects of natural disasters seem no longer detectable in comparison to control populations after about two years, whereas several studies have shown that the effects of human-made events may be much more prolonged (Green & Lindy, 1994) (From Disaster Mental Health Response Handbook, p. 44). The degree of death, destruction, horror, inescapability, shock, loss and dislocation will still be influencing factors in determining pathological outcomes for both types of disasters, but these may be more marked in many human-made disasters. Furthermore, the element of human contribution to the disaster, particularly human malevolence, is likely to add to the complexities and difficulties of psychological adjustment, thus leading to more adverse mental health effects (From Disaster Mental Health Response Handbook, p. 45).

Associated Disorders

In addition to PTSD and ASD, individuals who have experienced trauma are at heightened risk for developing other psychiatric disorders, including:

- Depression
- Substance abuse
- Panic Disorder
- Obsessive-Compulsive Disorder
- Sexual dysfunction
- Eating disorders

Bereavement and bereavement complications

(From Disaster Mental Health Response Handbook, pp. 41-43).

In situations of traumatic or catastrophic loss the bereaved person may demonstrate both traumatic stress reaction phenomena and bereavement phenomena, with either predominating or appearing intermittently (Raphael, 1997). Although a discussion of loss usually focuses upon death, loss that results from post-

disaster experience may thus include (Cohen, 1998):

- Loss by death of loved one, family, or friend
- Property destruction
- Sudden unemployment
- Impaired physical, social, or psychological capacities and processes

It is generally agreed that there may be an initial and usually brief period of shock, numbness and disbelief, and to a degree, denial. While this period may be more prolonged if there is the additional impact of psychological trauma (see below), it is usually brief. This initial period usually gives way to intense separation distress or anxiety. The bereaved person is highly aroused, seeking for or scanning the environment for the lost person on higher alert. There may be searching behaviors, particularly if it is not certain that the person is dead, or the body has not been identified. In a disaster setting the bereaved person may place himself or herself at further risk through agitated searching behaviors. There is also likely to be a sense of anger, protest and abandonment anger that may be recognized as irrational by the bereaved person but nevertheless amounts to anger towards the deceased for not being there and for being among those who died. Anger is also directed towards those who may be seen as having caused or been associated with the death, who are alive when the deceased is not.

These reactions progressively abate and give way to a mourning dimension where the bereaved person is focused more on the psychological bonds with the dead person, the memories of the relationship, painful reminders of the absence of the person, and progressively accepting the death, although with ongoing feelings of sadness or loss. These latter reactions are more likely to appear during the recovery phase with progressive attenuation as the bereaved person adapts to life without the person who has died. These complex emotions of anxiety, protest, distress, sadness and anger are usually referred to as grief. The acute distress phase usually settles in the early few weeks or months after the loss, but emotions and preoccupations may occur over the first year or years that follow.

Normal bereavement shows both attenuation of psychological distress and progressive functional adaptation during the first few months. Complications may include adverse mental health outcomes such as impact on immune function (Bartrop et al., 1977), development of depressive or anxiety disorders, and adverse social or health effects (Byrne & Raphael, 1994; Middleton et al., 1998). In addition, it has been shown that about 9% of a normal community sample of bereaved people may develop 'chronic grief.' This is a form of abnormal grief where the initial acute distress continues with other manifestations for six months or more, and often for many years. 'Traumatic grief' and complicated grief disorder are similar forms (Raphael & Minkov, 1999).

Risk factors for complications of bereavement have been identified by a number of researchers (Parkes & Weiss, 1983; Raphael, 1977; Raphael & Minkov, 1999; Vachon et al., 1980). These include:

- Perceived lack of social support
- Other concurrent crises or stressors

- High levels of ambivalence in relation to the deceased
- An extremely dependent relationship
- Circumstances of death which are unexpected, untimely, sudden or shocking

Personality vulnerabilities and a past history of losses may also contribute. Thus it is clear that many circumstances of disaster deaths may be likely to lead to higher risk of bereavement complications. It has also been shown that inability to see the body of the dead person may further contribute to risk of adverse outcomes (Singh & Raphael, 1981), perhaps disrupting opportunities for farewell (Schut et al., 1991). In this context the concept of traumatic bereavement is highly relevant.

Studies of traumatic bereavement have identified traumatic circumstances of the death as a risk factor for adverse mental health outcome (Raphael, 1977; Parkes & Weiss, 1983). Lundin's (1984) studies of sudden and unexpected bereavement found increased morbidity compared with those where bereavement was expected. Unexpected loss resulted in more pronounced psychiatric symptoms, especially anxiety, which was more difficult to resolve. The phenomena identified at long-term follow-up included high levels of numbing and avoidance and could be interpreted as reflecting traumatic stress effects. Lehman et al. (1987) studied bereavement after motor vehicle accidents, likely to involve traumatic and unexpected losses, especially when the bereaved had been an occupant of the vehicle and thus involved in and potentially traumatized by the accident. Even 4 to 7 years later, spouses showed significantly higher levels of phobic anxiety, general anxiety, somatization, interpersonal sensitivity, obsessive-compulsive symptoms and poorer well-being. For more than 90% of participants, memories, thoughts or mental pictures of the deceased intruded into the mind frequently, and for more than half of these they were 'hurt or pained' by these memories. These phenomena did not appear to be the sad, nostalgic memories of someone who has recovered from a loss, but were more like the intrusive re-experiencing of posttraumatic memories.

Copies of the Disaster Mental Health Response Handbook are available from:

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(Any references cited in the text and not given here are from the *Disaster Mental Health Response Handbook*.)

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