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Chapter Thirty-Nine

THE PSYCHOLOGICAL AFTERMATH OF TRAUMA: POSTTRAUMATIC STRESS DISORDER

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INTRODUCTION

Disasters create inordinate amounts of stress in the lives of the people they touch. The stress is not limited to the "direct" victims but extends to rescue workers, mental health workers, community planners, reporters and possibly even those who might be watching the drama unfold on television. Viewed in this light, disasters and other traumatic events take on a significant level of importance. As has been indicated elsewhere[1] the pervasiveness of disasters is underscored by the fact that between 1947 and 1973 there were over 836 major disasters worldwide in which greater than 100 people were killed or injured and which resulted in one million dollars of damage. In roughly the same timespan, the United States was involved in three wars which claimed the lives of over 10 million and injured over one million more. At the time of this writing, the U.S. recently completed its campaign to liberate Kuwait and the psychological consequences of this action on theatre combatants and civilian populations will not be fully examined for many years to come.

The purpose of this chapter is to provide an overview of the psychological impact of disasters, whether caused by man or by nature. The idea of providing a comprehensive overview of the psychological sequela of traumatic events is a Herculean task for a book length volume. It is an impossibility for a chapter length discussion. In light of this, the text which follows will attempt to acquaint the reader with the major features of posttraumatic stress reactions in general and Posttraumatic Stress Disorder (PTSD) specifically. The goal is to focus on those components which are central to any discussion of posttraumatic stress and to provide enough references so that the interested reader will have a place to begin a more comprehensive exploration. Rather than focus on a narrow band of research, e.g. Vietnam War Theatre veterans, a rather broad range of traumatic events will be discussed. In short, a focus on breadth rather than depth has been employed in order to entice the reader into further study.

BACKGROUND

While it is generally accepted that disasters are situations which invoke significant stress, there has been considerable debate as to the effects of this stress on adults and children.[2] Some studies report little or no significant mental health consequences[3,4,5] while others document significant behavioral and emotional difficulties.[6,7,8,9,10] Questions arise as to whether the symptoms that surface are transient and short-lived or whether they are chronic in nature![11]

The advent of the Vietnam War heralded significant interest and attention in the psychological consequences of sustained stress and trauma. In 1980, the American Psychiatric Association published the third revision of the Diagnostic and Statistical manual (DSM-III)[12] which introduced the diagnostic entity entitled Posttraumatic Stress Disorder (PTSD). The introduction of PTSD as a formal diagnostic category helped to organize much of the thinking and research in the area.

While PTSD is a relative newcomer to psychiatric nosology, the existence of stress response syndromes has been recognized since the time of Freud[13] who suggested that victims of trauma attempt to remember or repeat the trauma and that they attempt to defend against or avoid the memories and repetitions![14] In the first Diagnostic and Statistical manual (DSM-I) responses to stress were grouped under "gross stress reaction"![15] It was believed that this disorder was transient and would resolve rapidly unless it was maintained by preexisting personality disturbance![16] DSM-II[17] provided two categories for stress disorders: "transient situational disturbance" was used when the symptoms were of short duration while "anxiety neurosis" was used if the symptoms were more persistent. As Green and her colleagues[18] point out, these diagnostic categories imply that responses to stress or trauma are short lived unless the individual suffers from other pathology. Also inherent in these descriptions is the notion that individuals who have a protracted response to stress do so because of difficulties in their early history. The publication of DSM-III represented a shift in thinking whereby trauma in adulthood may yield significant psychological disturbances *independent* of earlier difficulties.

PTSD - THE SYNDROME

The most recent revision of the Diagnostic and Statistical manual, DSM-III-R,[19] classifies PTSD as an anxiety disorder which has a characteristic pattern of symptoms that arise after exposure to a "psychologically distressing event that is outside the range of usual human experience" (p. 247). It is believed that this event would be distressing to the vast majority of people and that it would be experienced with fear, terror and hopelessness. Most commonly, the traumatic events include a significant threat to one's life or property; significant threat of harm (or actual harm) to one's children, spouse or other loved ones; sudden destruction of a home; catastrophic community event; or witnessing another person(s) being seriously injured or killed. The stressors may be natural disasters (e.g. tornados, floods, earthquakes), accidental disasters (airplane crashes, fires, structural collapse) or disasters which are deliberately caused (e.g. bombing, torture, concentration camps).

The symptoms associated with PTSD are grouped into three broad categories: (a) reexperiencing of the event, (b) persistent avoidance of stimuli associated with the event or an emotional numbing, and (c) a set of miscellaneous symptoms. The trauma may be reexperienced in a variety of ways including intrusive recollections of the event, persistent dreams about the trauma, sudden "flashbacks" to the trauma where the individual experiences a sense of reliving the event, and significant emotional distress when confronted with stimuli that are associated with the trauma or may be symbolic of it (e.g. anniversaries). Avoidance may take the form of avoiding thoughts of the trauma, avoiding events that may remind the individual of the trauma, amnesia for important components of the trauma, significantly decreased interest in activities, feelings of detachment or estrangement from others, restricted range of emotional experiences, and a sense of a "foreshortened future." Additional symptoms include irritability, anger outbursts, decreased concentration ability, hypervigilance, exaggerated startle response, physiologic responsivity to events that resemble or symbolize the trauma (e.g. car accident victim experiences heart palpitations on hearing car tires squeal) and sleep difficulties. Indeed, sleep disturbances have been advanced as the hallmark of PTSD.[20]

PATHOLOGIC VERSUS "NORMAL" RESPONSE

Thus far the diagnostic criteria for PTSD have been outlined. However, by virtue of the fact that PTSD is included in the DSM-III-R, it is considered to be a "mental disorder." When does a "normal" response to a disaster or other significant trauma turn into a "disorder?" Is PTSD an inevitable consequence to trauma? Much debate exists around both of these questions. From a diagnostic perspective, the symptoms outlined above must persist for at least thirty days in order to be legitimately diagnosed as PTSD according to DSM-III-R. Inherent in this criteria is the recognition that individuals exposed to catastrophic trauma experience myriad psychological symptoms which may or may not become persistent or chronic in

nature. As such, these "transient" symptoms are considered to be part of a "normal" response to a traumatic event rather than a disorder *per se*. Additionally, a victim may experience only a subset of the symptoms which are manifest in PTSD and hence not meet criteria for the disorder. As MacFarlane points[16] out, "intrusive imagery is commonly observed in victims of disasters who do not have any numbing or other disturbance of mood arousal or attention and may be as much an indicator of distress due to exposure to extreme adversity as a marker for PTSD" (p. 5). Others may experience symptoms after exposure to trauma which are not necessarily related to those of PTSD. For example, in a study of tornado victims[21] it was found that victims did not typically experience "incapacitating" emotional problems, yet 75% reported subjective distress characterized by tension, nervousness and anxiety, and "minor" somatic complaints. Similarly, no differences were found in illness rates, duration of illnessess or self-perceived impact of a disaster when flood victims were compared to non-flood groups.[4]

In short, the current diagnostic nosology allows for the expression of "normal" posttraumatic stress reactions. If the symptoms persist and are manifest according to the published criteria, a *diagnosis* of PTSD is applied. In the pages that follow, studies will be discussed which alternately use the terms "posttraumatic stress" and "PTSD." Since PTSD is a relative newcomer, many early studies do not correspond to current diagnostic distinctions. When possible, an indication will be made to specify the studies that refer to DSM-III/DSM-III-R diagnoses and those that do not.

PREVALENCE OF POSTTRAUMATIC STRESS

The literature which examines the prevalence of posttraumatic stress reactions in general or Posttraumatic Stress Disorder more specifically is fraught with contradiction and controversy. While some report a common occurrence of stress disorders following traumatic events, others report little or no significant mental health complications.[22] In response to the difficulties present in the extant literature, Green[23] concluded that the data were so contradictory that no definitive conclusions could be drawn. Nevertheless, the issue remains central to any discussion of the effects of disasters on the mental health of individuals. In light of this, a sampling of reported prevalence rates is presented below for a variety of natural and man-made disasters. These data stand in contrast to the prevalence rate of PTSD in the general population which is estimated to be approximately 1%.[24]

Much of the research on PTSD has concentrated on Vietnam Theater Veterans. Data from the National Vietnam Veterans Readjustment Study (NVVRS[25]) estimate that approximately 479,000 men suffer from PTSD while current prevalence rates for female theater veterans are estimated at 8.5% or approximately 610 cases. NVVRS data estimate that the *lifetime* prevalence of PTSD is 30.9% for male veterans and 26.9% for the females. Additionally, it is estimated that 22.5% of the men and 21.2% of the women had a lifetime prevalence of "partial" PTSD. Therefore, more than half of the men (53.4%) and almost half of the women (48.1%) in the

Vietnam theater experienced clinically significant stress-reaction symptoms. It is of significance that the rates of PTSD varied according to the level of war-zone stress that the veteran was subjected to; those veterans exposed to high levels of war-zone stress had rates that were "dramatically" higher than those exposed to low or moderate war-zone stress. This would suggest that the intensity of exposure to a traumatic event or the intensity of the traumatic event itself is related to the type and severity of symptoms exhibited. However, this hypothesis has not been fully supported by the empirical literature. Also of interest is the finding that Hispanic veterans have higher current prevalence PTSD rates (27.9%) than Blacks (20.6%) or White/"Other" (13.7%). The implications of this finding have not been fully explored.

Individuals involved in "body handling" and recovery during disasters are at increased risk of PTSD up to six months following the exposure with estimates of up to 40% of body handlers experiencing significant levels of distress.[26] In his study of an Australian bush fire disaster, McFarlane[27] found that approximately 50% of the firefighters involved in the disaster suffered from some form of PTSD (158 "no disorder" group and 157 in disorder subgroups). Eight months after the fire, 50 firefighters who were identified as a "high risk" subgroup were reassessed. McFarlane[28] found that of this group, nine developed chronic or delayed PTSD, two experienced acute PTSD which had resolved and five were classified as having "borderline-chronic" PTSD. Thus 32% of this high risk subgroup developed symptomatology significant enough to warrant a diagnosis of PTSD.

In a study of the effects of a tornado which devastated a rural North Carolina community[2] it was found that 59% of the respondents qualified for a diagnosis of acute PTSD according to DSM-III criteria. Of these, 16% were reported to have been suffering from a "severe" form of the disorder. Eighty-two percent of the sample reported experiencing intrusive thoughts, 81% reported an exaggerated startle response, and over 50% of the sample reported increased tension when reminded of the event, decreased concentration, memory difficulties, feelings of estrangement and insomnia.

In 1972, a huge wave of sludge and black water was released from the failure of a sludge waste dam and devastated the Buffalo Creek Valley in Southern Virginia. It has been reported[29] that "traumatic neurotic reactions" were found in approximately 80% of the survivors while it is estimated that over 90% of the children were experiencing "disabling psychiatric symptoms" two or more years after the disaster. However, caution must be used in interpreting these data since all of the victims were involved in a lawsuit in which they stood to gain financial compensation for the difficulties they were experiencing.

Kinzie and his colleagues[30] surveyed a sample of Indochinese refugees and found that an outstanding 70% of the sample met diagnostic criteria (DSM-III) for PTSD. An additional 5% were found to meet the criteria for past PTSD. Of the total group, it was found that the Mein experienced the highest rate (93%) while the Vietnamese had the lowest rate (54%). These data are in contrast to other studies which estimate a prevalence of PTSD at 50% among a southeast Asian population[31] and 50% among Cambodian adolescents.[32]

Rape victims have also been shown to experience high prevalence rates. It has

been reported that up to 70% of rape victims meet the criteria for PTSD.[35 34,35] Donaldson and Gardner[36] found that 96% of women psychiatric patients with a history of incest reported symptoms of PTSD.

CHRONICITY OF POSTTRAUMATIC STRESS

As with prevalence data, the literature on the course of posttraumatic stress reactions is often contradictory and lacks a cohesive theoretical framework to guide research endeavors. In part, the difficulties in documenting the natural course of the disorder stem from the observation that the psychological effects of exposure to trauma often manifest themselves over a broad timespan.[37] Additionally, the pattern of the symptoms themselves creates difficulty. Horowitz[38] proposed a model which characterizes the course of stress related difficulties as cyclical in nature with periods of intrusive thoughts, relative dormancy and emotional numbing. Green[18] has suggested the possibility that those symptoms which represent enduring patterns of attitudes and behaviors towards oneself or others (e.g. alienation, estrangement, excessive guilt) are less cyclical than those which represent intrusions (e.g. nightmares, reenactments). These may also differ from those symptoms which are physiological in nature (hypervigilance, hyperarousal). Hence, the diagnosis of PTSD may be a function of *when* the individual is interviewed in relation to the trauma. For example, in a study of unsolicited psychiatric patients following a bush fire,[39] it was found that the majority of cases estimated the onset of symptoms at a point two months after the disaster. The author notes that 24 months after the fire, new cases were still presenting themselves for treatment. Similarly, while some individuals may experience all of the component symptoms of PTSD during the course of their illness, they may not experience them as a group in close enough proximity to each other to meet the criteria for the diagnosis of PTSD.

The DSM-III included three distinct forms of PTSD: acute, chronic and delayed. In the subsequent revision (DSM-III-R), the differences between the acute and chronic forms were eliminated due to a lack of substantive arguments for maintaining the distinction, as well as an attempt to reduce the overall number of disorders.[14] A "delayed onset" category was retained and is to be used if the onset of symptoms occurs at least six months post trauma (DSM-III-R).

Despite the methodological difficulties noted above, many published reports lend credence to the belief that PTSD is a chronic rather than acute dysfunction. Data from the Buffalo Creek disaster suggest that significant symptoms of anxiety continued to be characteristic of victims seventeen years after the flood.[40] Three Mile Island victims continued to be bothered by intrusive thoughts and engaged in avoidance of thoughts five years after the accident. They also demonstrated performance decrements in a cognitive task and exhibited elements of hyperarousal.[41] McFarlane[27] found that of those firefighters that experienced posttraumatic symptoms, 42% reflected a chronic pattern while 39.5% were delayed onset. In short, 68% of the firefighters who experienced symptoms shortly after the fire (4 months) developed chronic forms of the disorder. McFarlane points out

that these findings stand in contrast to the early (DSM-III) statements that acute PTSD has a good prognosis.

Cambodian refugees who survived up to 4 years in concentration camps were found to be experiencing PTSD a minimum of three years after internment.[42] Southeast Asian refugees continued to experience symptoms of PTSD 10 to 15 years after the trauma. In fact, only 6% of those patients who had a past diagnosis of PTSD no longer met the criteria.[30] In a study of 62 World War II POWs, it was found that 50% met the criteria for PTSD the year after repatriation and 29% of these met the criteria for PTSD 40 years later.[43]

Leopold and Dillon[44] reported on the effects of an explosion aboard a gasoline tanker that collided with a freighter at sea. It was found that all but six of the 27 men interviewed immediately following the accident experienced significant symptoms of posttraumatic stress. In a follow-up conducted 3.5 to 4.5 years later, it was found that 71% of the men experienced an "appreciable deterioration" in symptoms with those in the older age group (above 36) reflecting the most deterioration. Similarly, in an interesting report on the coping strategies of seven men who survived a shipwreck, it was noted that five developed a "substantial psychiatric disorder" 12-24 months after the incident.[45]

POSTTRAUMATIC STRESS IN CHILDREN

Brett and her colleagues[14] have examined diagnostic issues with respect to PTSD in children and report that while many of the symptoms that pertain to the adult manifestation of the disorder are appropriate for children, several characteristics are specific to children. Specifically, children often reexperience the trauma by engaging in repetitive play which contains themes or components of the trauma. Children may manifest the loss of recently developed skills and regress to more developmentally primitive levels. The sense of a foreshortened future is manifest in the fear of not reaching adulthood or a decreased expectation of attaining particular life goals (e.g. career, family). Children may also exhibit omen formation in which they mistakenly believe in an ability to prophesy future untoward events. Other symptoms noted in DSM-III-R include: occasional muteness and refusal to discuss the event, the presence of physical symptoms (e.g. stomachaches, headaches), and distressing dreams which may generalize to nightmares symbolically related to the trauma or experiences related to the trauma.

A group of 10 children ranging in age from 2 to 6 years were treated and evaluated for PTSD after reportedly having experienced sexual abuse in a daycare setting.[46] It was found that the children exhibited a variety of behaviors that appeared to be trauma related: trauma related fears, mundane fears, sleep disturbances, aggressive behaviors and depressed withdrawn behaviors. Many of the children appeared to be reexperiencing the trauma by reacting with "panic" behaviors to stimuli related to their experience. They evinced enduring interpersonal difficulties characterized by a mistrust of people. Also found was a difference between the boys and girls with the boys initially presenting with more "clinically significant" reactions. Yet

the girls appear to be more symptomatic at a one year follow-up.

In a longitudinal study on the effects of an Australian bush fire on 808 schoolage children, McFarlane[47] found that approximately one third of the children were experiencing preoccupation with the fire 26 months after the disaster. No significant "working through" was found as time passed between the 8th and 26th month post disaster. At 2 and 8 months after the fire the intensity of anxiety and behavioral disturbances exhibited by a child in school was significantly correlated with the intensity of posttraumatic phenomena at 26 months post disaster. These data are supportive of the ability of acute behavioral distress to predict latter posttraumatic symptomatology, particularly if the difficulties are expressed in a setting separated from the reassurance of the parents. In addition, the author also finds support in these data for the contention that a child's response to a traumatic event may be more a function of the parents' response to the trauma than the intensity of the danger experienced. This finding is consistent with those obtained in a study of a regatta accident in which it was found that the severity of PTSD symptoms was not commensurate with the seriousness of any injuries sustained.[48]

Eth and Pynoos[49] propose four developmental considerations in understanding the effects of traumatic events in children: (1) the presentation of symptoms and content of PTSD in children will vary with age although the general phenomena appears consistent across age groups; (2) the child's early efforts to cope with traumatic anxiety and helplessness vary as a function of maturity (e.g. evolving ability to regulate intense affects and formulate cognitive reappraisals); (3) developmental influences can either augment or impede the recovery process—depending on age, children are more or less susceptible to intrapsychic, parental or societal pressures; and (4) the interplay between the trauma resolution process and other childhood tasks must be monitored—e.g. schoolwork, play and other interpersonal relationships are immediately affected.

As with adults, it appears that the development of PTSD in children and adolescents requires the understanding of a complex interaction of variables. However, with children, it is imperative that the symptoms are understood in the context of developmental level and family functioning.

ETIOLOGICAL FACTORS IN PTSD

There is little question as to the proposition that catastrophic events can lead to the development of significant mental health symptoms. However, not all individuals exposed to trauma develop significant trauma related disorders. What factors combine to produce a disorder in some individuals and not others? Are some individuals predisposed or more vulnerable to the development of PTSD?

It has been argued that while exposure to a disaster or other extreme event is required for the diagnosis of PTSD, it is not sufficient to explain its onset.[27] In light of this, the development and maintenance of PTSD must reflect a multidimensional framework that includes biological, psychological and social components. Several etiological models of PTSD exist including biological,[50] neuropsychological,[51]