Disasters, A Psychological Perspective

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Abstract

Psychological research has shown that disasters can cause serious mental health consequences for victims. These consequences take the form of Posttraumatic Stress Disorder and a variety of other disorders and symptoms which have been less investigated. The more stress, defined in a variety of ways, within the disaster, the more likely there are to be emotional consequences. Vulnerability factors within the victim operate in complex ways, but seem related to the extent of stress experienced by the victim and the available resources, broadly defined, with which to deal with it. The mental health profession has developed a variety of strategies with which to ameliorate the effect of disaster. Although recent research on single session debriefing has produced disappointing results, many techniques and therapies have been validated as successful interventions for disaster victims.

Unlike other disciplines, which have come more recently to the study of disasters, psychology has concerned itself with disasters' impacts on victims for much of its own short history. As long ago as 1944, Lindemann published an observation of the psychological aftermath of the Coconut Grove nightclub fire in Boston. Besides the obvious involvement psychologists have in attempting to relieve distress of victims, disasters have a relationship to several important psychological constructs. Disasters allow psychologists to perceive the operation of trauma on emotional functioning, an operation which mental health practitioners as far back as Freud have been interested in understanding. Stress research is a central and crucial explanatory factor in many fields of psychology, especially community psychology, which considers stress the central ingredient to the formation of psychopathology (e.g., Albee, 1997; Dohrenwend, 1998). There is an ethical limit to the extent that stress can be manipulated in the laboratory, and disasters allow psychologists the opportunity to observe how extreme stress impacts individuals and groups.

Because of psychology's interest in trauma and stress, its definition of disaster has differed somewhat from that employed in other fields. In the 1970's, after the Vietnam War and the discovery of its impact on veterans, and after the discovery of the long-term effects of child sexual abuse, the mental health field conceptualized a disorder specifically related to the consequences of trauma, Post Traumatic Stress Disorder (PTSD) (American Psychiatric Association, 2000). We will define PTSD later in the chapter. Here we are making the point that because of the interest by psychologists in PTSD, there has been some blurring between the concepts of victimization from any source and victimization from disaster. For instance, vulnerability factors to PTSD in victims of an earthquake may be similar to vulnerability factors to PTSD in victims of rape, and effective treatments may also be similar, so that studying a broader group of victims may be useful in understanding disasters.

In spite of many differences in opinion (e.g., Quarantelli, 1998), the definition of disaster in use in this chapter agrees with that of most psychologists (e.g., Barton, 1969; Norris, Friedman, Watson, Byrne, Diaz & Kaniaty, 2002) who regard disasters as involving an unexpected or uncontrollable event rather than a long-term experience. That is, a disaster is something that could happen within a war (e.g., My Lai, or many other less well-known examples) rather than the war itself, or Three Mile Island rather than Love Canal. These examples illustrate the difficulty with the distinction, and some researchers think that our concept of disaster should include chronic disaster (Couch & Kroll-Smith, 1985). Dynes (2004) has argued that social scientists need to expand their definition of disaster to encompass events like war, genocide, and refugee experiences that are critical in third world countries.

Disasters are also usually viewed as a collective experience, excluding personal disasters like sexual abuse or automobile accidents, unless these involve a large number of people. Again, the dividing line can be unclear. The type of event, with its various dimensions, can affect our perceptions. We might not consider an automobile accident that killed 13 people to be a disaster, even if many others were involved or witnessed it, but the killing of 13 in the shootings at Columbine certainly qualifies.

With the passage of time, study of disasters has become less descriptive and more quantitative, attempting to resolve some of the methodological problems of this research. The focus has moved from the question of whether there are significant long-term psychological impacts of disasters, to studying the types of impact that occur and what factors in the disaster and in the individual increase the likelihood of emotional damage. Interventions to assist victims have been developed. Most recently, there has been more focus on the effectiveness of these interventions. This chapter will explore in turn each of these areas: methodology of disaster research; extent of psychological impact of disasters; types of psychological sequelae; damaging aspects of disaster; vulnerability factors; psychological interventions for victims; and the effectiveness of these interventions.

Methodology of Disaster Research

Early studies of disaster tended to be descriptive. Lifton (1967) described the emotional impacts of Hiroshima, Coles (1967) portrayed the effect of political disaster on children (1967), and Erikson (1976) painted the picture of the aftermath of the Buffalo Creek floods in West Virginia. While some researchers (e.g., Edelstein, 2004) still favor a

qualitative approach, most psychological disaster research today tends to be quantitative.

Problems exist for the social scientist who wishes to study disaster. Experimental design requires random assignment of participants to experimental and control conditions. Even if a mad scientist wanted to conduct such an experiment, controlling a disaster is an oxymoron. Disaster research can only attain the status of quasi-experimental design, with comparison groups, not controls. Since disasters occur unpredictably, pre-test data on victims are usually not available. Psychologists called into a disaster are usually there to provide help. Researchers can seldom obtain access to the disaster at its onset, and if they do find access, the exigencies of the situation usually preclude administration of standard instruments in a standardized fashion. Victims usually have no motive to participate in research, and follow-up studies are often difficult to arrange. Samples of victims vary from those directly impacted, to rescue workers, to the families of the bereaved. It is difficult to compare Western victims to those from third world countries, as their circumstances and resources are so different, and for the same reasons it is difficult to compare victims from different ethnic groups within a culture.

Disasters also vary widely in the amount and the nature of the stress they involve: duration; loss of life; personal injury, or injury to loved ones; property damage; terror; helplessness; gruesome sights, sounds and smells; dislocation from one's home; availability of social support – all these factors may differ in a flood as contrasted to an earthquake, or between one flood and another, or between one victim's and another's experience of the same flood. One special differentiation between types of disaster is the natural vs. the technological, or human-caused, disaster. Natural disasters tend to involve

lack of control over natural forces, like wind, that we expect to be uncontrollable, while technological disasters can be less defined, especially if they include toxic exposure, and can involve a loss of control over an area of life in which we expect control, like drinking water (Baum, Fleming, & Davidson, 1983). Terrorism is a special form of technological disaster, and the most recent addition to the typology of disaster (Ursano, Fullerton, & Norwood, 2003).

As psychologists conducted more disaster research, they began to develop standardized measures, beginning with the Impact of Events Scale (Horowitz, Wilner & Alvarez, 1979). Many measures have been devised to diagnose post-traumatic stress disorder (PTSD), one of a number of psychological consequences of disaster. The National Center for PTSD (2003) currently lists 15 adult PTSD self-report measures, 4 interview measures, and 9 measures for children. Obviously, many other standardized measures of other types of psychopathology have been administered. Measures have also been developed to identify vulnerability factors and intervening variables, e.g., the Peritraumatic Dissociation Experiences Questionnaire (Marmar, Weiss, Schlenger et al., 1994), and World Assumptions Scale (Janoff-Bulman, 1985).

Comparison groups, if not actual control groups, were introduced early into the research. A step forward in the confusing array of studies on different disasters with different samples and different methods came with the meta-analysis of Rubonis and Bickman (1991), which found small but consistent post-disaster effects on levels of psychopathology across different types of study and types of disaster.

Robins, Fischbach, Smith, Cottler, Solomon, and Goldring (1986) seized upon

a fortuitous (or infortuitous) series of events at the Times Beach site in Missouri. Interviews had taken place in that area for the Epidemiological Catchment Area study which documented the prevalence of psychiatric problems in the country. Then the area was struck both by floods and the discovery of dioxin. This allowed the comparison of the effects of a natural and a technological disaster, with pre-test information available for a sample of the victims, and documented that change had occurred.

When Norris et al. reviewed the disaster literature in 2002, she found six other studies that were able to obtain true pre-test measures for their samples. Comparison of types of disaster exposure for the same sample remains rare. Norris et al. also report that many recent disaster studies used follow-up formats and probability sampling methods. In short, methodology has improved dramatically, and conclusions can comfortably be drawn about the psychological impact of disasters.

Extent of Psychological Impact of Disasters

As noted, Rubonis and Bickman found in their 1991 meta-analysis consistent but small post-disaster effects upon psychopathology. Many other review chapters and articles have been written (e.g., Gibbs, 1989, 1991, Green & Solomon, 1995; Katz, Pellegrino, Pandya, Ng, & DeList, 2002; Sundin & Horowitz, 2003), concluding that post-disaster effects are greater and more pervasive than Rubonis and Bickman's inferences. The most thorough recent review is that of Norris et al. (2002a). The authors analyzed 160 different disaster studies, with a total of over 60,000 participants, and did not conduct a meta-analysis because of the difficulty in deriving effect sizes from descriptive studies. Using a rough four point scale to rate level of pathology, they found that only

about 10 of studies found minimal impairment, about half the studies found moderate impairment, and the remaining 40% found severe or very severe impairment. Severe impairment was equivalent to rates of psychopathology in the participants of between 25 and 50%.

For many years there has been a debate over whether the effect of disaster on mental health was important. One side of the debate came from the sociological point of view (e.g., Quarantelli & Dynes, 1985), which focused on the adaptive nature of community response, both in the immediate aftermath of a disaster and in most people's long-term response. The majority of people function adaptively during and after a disaster, and the old notion (Kinston & Rosser, 1974) that individuals will experience panic, wander aimlessly and be dependent has been shown to be untrue (Wenger, Dykes, Sebok, & Neff, 1975). But that is a different matter from focusing on the toll that the disaster takes on some individuals. There is so much evidence now of the damage to individuals, that to our minds, the debate has been resolved. Norris, Friedman, & Watson (2002b) conclude that the field does not need new studies indicating that disaster causes serious psychopathology; we know this to be the case. Instead, we should focus on understanding what aspects of disaster are most devastating, and what characteristics of individuals make them vulnerable, issues we will address later in the chapter.

Forms of psychopathology resulting from disasters.

If it is clear that disasters cause psychopathology, it is less clear what form that psychopathology takes. Since the mental health profession developed the PTSD diagnosis, PTSD has been the main focus of research on the aftermath of disaster. The criteria for

PTSD include (APA, 2000): 1) having been exposed to a traumatic and fearful event; 2) re-experiencing the traumatic event, usually in flashbacks or nightmares; 3) avoidance of situations and stimuli that could reawaken the trauma, for example, numbing one's feelings or withdrawing from others; and 4) increased level of arousal, for instance, sleep difficulties, irritability, and concentration problems.

Norris et al. (2002a) reported that 68% of their research samples assessed for and found PTSD in disaster victims. The second most common psychiatric problem was depression, found in 36% of the samples. Anxiety in various forms was shown in 32% of the samples. Health concerns were also often present (23% of the samples). It was not usually clear whether victims' health concerns were realistic, or were based on somaticizing the stress of the experience (North 2002). Alcoholism and drug abuse were not often investigated but when they were, levels of abuse have been found to rise after disasters.

What is not clear from the above figures is what the actual rate of various psychopathologies might be if each study had assessed for all of them. Norris et al. (2002b) recommend that all disaster researchers use a standard measure of psychopathology so that it can be more clearly determined which disorders are linked to undergoing disaster.

Victimization, primarily child physical and sexual abuse, has been shown to lead to other diagnoses beyond the ones investigated in disasters. These include schizophrenia and other psychoses (Neria, Bromet, Sievers, Lavelle, & Fochtmann, 2002), dissociative disorders (Coons & Milstein, 1986) and borderline personality disorder

(Herman, Perry & Van der Kolk, 1989). None of these diagnoses has been investigated to see if higher rates result after disaster, although dissociative symptoms have been reported during and after some disasters (Marmar, C. R., Weiss, D. S., Metzler, & DeLucchi, 1996; Weiss, Marmar, Metzler, & Ronfeldt, 1996) and can be part of the avoidance criterion of PTSD (APA, 2000). It would be valuable to look at long-term vulnerabilities of childhood victims of disaster to these disorders. Little research of any kind has been conducted looking at long-term consequences of disasters for children.

An issue that has been discussed in the literature is whether symptoms of other disorders found after disasters are part of the PTSD syndrome or whether they are independent consequences. There are several possible explanations for the overlap that often is observed. Symptoms within diagnoses do overlap, symptoms of other diagnoses could be sub-clinical cases of PTSD, PTSD could increase vulnerability to other diagnoses, and other diagnoses could increase vulnerability to PTSD (McMillen, North, Mosley and Smith, 2002). In particular, the fact that depression and PTSD are both common consequences of disaster is of interest. Greening, Stoppelbein, & Docter (2002) conducted an interesting study in which they looked at attributions for the negative outcomes of the Northridge earthquake. Victims who made what have been labelled depressogenic attributions, seeing negative outcomes as related to internal, stable and global causes (Abramson, Seligman, & Teasdale, 1978), were more likely to develop depressive symptoms, but not PTSD symptoms. Livanou, Basoglu, Salcioglu and Calender (2002) looked at PTSD and depression as outcomes of the Turkish 1999 earthquake, and found that there were different predictors for each. Research into the relationship between different outcomes of disaster is continuing, but the lack of solid findings points out that

we know little about the actual mechanism of how symptoms are caused by disaster stress.

Aspects of disaster which contribute to psychopathology

In general, the nature of the disaster and the extent of the trauma it wreaks are more predictive of the extent of psychopathology that follows than are characteristics of the victims (Sundin & Horowitz, 2003). The more stressful the disaster experience, it appears, the more negative the consequences, but it is not always possible to identify which of the many factors within a disaster make it more stressful. Theorists have identified the following as important characteristics: mass violence (Norris et al., 2002); the experience of terror and horror (Bolin, 1985); duration of the disaster (Baum & Davidson, 1985, Bolin, 1985); and the amount of unpredictability and lack of control (Baum & Davidson, 1985; Thoits, 1983).

First responders and disaster workers are at special risk for PTSD and other negative emotional consequences of disaster (Gibbs, Lachenmeyer, Broska, and Deucher, 1996; Norris, 2002a) . This vulnerability has usually been perceived to be related to the experience of the work rather than to any inherent vulnerability factors, as often people choosing these professions have high levels of emotional hardiness. Looking at disaster workers who dealt with the aftermath of the World Trade Center disaster of September 11th provides an example. Working with dead bodies and body parts after a major disaster is something that almost everyone finds extraordinarily stressful, and perhaps the experience could be said to define horror. Disaster workers' experience of the disaster is often more long-term than that of other victims, as for instance the long term digging out

after September 11th. In addition, the experience of helplessness and lack of control is prevalent, as workers searched for but were unable to find identifiable bodies.

Psychologists have many theories about what causes the disorders of PTSD, depression, anxiety reactions, etc. (e.g., Barlow, 2000), but little conclusive about what it is exactly about a disaster that leads to emotional damage.

As we have mentioned, most psychologists identify stress as a leading cause of psychopathology, but theories as to how stress affects its victims are varied. Some focus on the physiological overload of stress (e.g., Selye, 1976), some on the unpredictability and uncontrollability of stress (e.g., Kelly, 1955) and some on the conditioning that takes place between a frightening stressor and other aspects of life, with a resulting avoidance of stimuli that are reminders (Mowrer, 1960). Losses in a disaster, of other people, of material goods, of one's own health and security, are also critical (Nolen-Hoeksema, 1990). Some theorists focus on the shift in cognitions that take place after a disaster. Janoff-Bulman and Frieze (1983) speculated that cognitions shift after a disaster. The individual asks "Why me?" and the answer involves a change in one's sense of invulnerability, in the world's predictability, and in one's own worth.

Vulnerability factors

Research has identified a number of characteristics of victims that make them more vulnerable to disaster effects. Vulnerability factors include, but are not limited to, socioeconomic status (SES), available resources, previous level of psychopathology, age, social/family factors, gender and ethnicity.

Regarding SES, Norris et al. (2002a) found that thirteen of fourteen samples which investigated socioeconomic status and disaster outcome found lower socioeconomic status to be associated with increased post-disaster distress. Studies included a wide range of disasters: an air disaster (Epstein, Fullerton, & Ursano, 1998), an industrial disaster (Vila, Witowski, & Tondini, 2001), floods (Ginexi, Weihs, Simmens, & Hoyt, 2000), and an earthquake (Lewin, Carr, & Webster, 1998). Individuals who live in poverty tend to have fewer resources available to them to attenuate the effects of disaster.

Pre-existing psychopathology is a risk factor for developing psychopathology related to a trauma (Norris et al., 2002a) in that individuals who suffer from a psychological disorder are more susceptible to further distress in the aftermath of a disaster. For example, pre-disaster anxiety disorders (Asarnow et al., 1999), depression (Knight, Gatz & Heller, 2000), and suicidal ideation (Warheit, Zimmerman & Khoury, 1996) were found to increase the likelihood of post-disaster psychopathology.

In terms of age, Norris et al. (2002a) noted that middle-aged adults appear to be the group most affected by disasters. This age group may have more burdens and stresses (Thompson, Norris & Hanacek, 1993), such as caring and providing support for a family, that may be amplified in the aftermath of a disaster.

Social network characteristics influence vulnerability. For example, a lack of perceived (Bromet, 1982; Dougall, Hyman & Hayward, 2001) or received (Sanchez, Korbin & Viscarra, 1995; Udwin, Boyle & Yule, 2000) social support may lead to greater post-disaster distress.

These risk factors do not operate in isolation. Any single factor is often interrelated with others. We will illustrate this complex interaction within the context of two variables: gender and minority or third world ethnicity, both of which Norris et al. (2002a) in their review cite as among the most robust of vulnerability factors.

Gender. Norris et al. (2002a) stated that in 94% of 49 studies which investigated the issue, female survivors of disaster were more seriously affected than were males. There are several possible explanations for this difference. For example, as mentioned in the previous paragraph, low socioeconomic status is a risk factor for post-disaster psychopathology, and women more often live in poverty than men (Belle, 2000).

The gender difference may be in part explained by differences we often observe between the genders in the way psychological distress is expressed. In general, women are more likely than men to acknowledge psychological symptoms and to report them (Nolen-Hoeksema, 1990). After a disaster, males may suppress feelings of psychological distress because of the expectation that men must be strong and capable (Wolfe & Kimerling, 1997). As discussed in a previous section, the most commonly investigated post-disaster reactions are PTSD, depression, and other forms of anxiety. Substance abuse and other acting out behaviors, such as interpersonal violence, are seldom assessed. Men are more likely to express psychological distress through these kinds of behaviors, rather than reporting neurotic-type symptoms like depression and anxiety (Myers, Weissman, Tischler, et al., 1984).

Women have higher pre-disaster rates of depression and most anxiety disorders

than men (Myers et al., 1984), putting them at risk for disaster-related distress. Furthermore, there may be some experiences that women are more likely to have that may contribute to the development of PTSD post-disaster. The experience of rape and sexual assault is higher among women than men (Kessler, Sonnega, Bromet, Hughes & Nelson, 1995), and it has been shown that when compared with other forms of trauma, unwanted sexual contact is more likely to result in PTSD (Breslau, Davis & Andreski, 1997; Kessler et al., 1995). Pulcino et al. (2003) found that the experience of previous unwanted sexual contact increased a woman's likelihood of endorsing PTSD symptoms after the September 11th attacks by 33%.

The interaction of gender and various social/family factors highlights the interconnectedness of vulnerability factors. While men typically cope using individual and immediate decision-making, women use their social network to process and work through problems (Kawachi and Berkman, 2000; Taylor, Klein & Lewis, 2000). After a disaster, changes often occur in one's social network (Kaniasty & Norris, 1997). In a study with victims of Hurricane Andrew, Norris, Perilla, Riad, Kaniasty & Lavizzo (1999) noted that nearly all of the events that were experienced in common by the sample were related to changes in the social environment. Womens' PTSD symptoms have been shown to increase as their available social supports decrease, a finding that was not true for men (Pulcino et al., 2003). Change in the social network, which may involve a decrease in available social support, may be more devastating for women than for men due to its negative effect on their coping ability.

Traditionally, women have been assigned the role of caregiver, a role that may lead to increased stress levels in the aftermath of a disaster. First, for women who are primary

caretakers, the extra stress of caring for children and the home may fall disproportionately on them. Norris et al. (2002a) noted in their review of disaster studies that being a parent, especially a mother, was associated with higher disaster-related distress. In a study with survivors of the 1999 earthquake in Turkey, a higher percentage of women than men reported that their first thoughts were of their family (Yilmaz, 2004). Second, women may be more likely to provide care for others affected by disaster (Kaniasty & Norris, 1995; Solomon, Smith, Robins, and Fischbach, 1987). In a study with vicarious victims of the September 11th attacks, more than twice as many women than men reported engaging in collective helping behavior (Wayment, 2004). When women offer support to other people, not only can they be further exposed to the trauma through contact with others, but they also may be burdened by the stress of providing support in times of need (Solomon et al., 1987). A particularly devastating situation may be the one in which a woman provides support services to others in the aftermath of a disaster, but does not receive an equal amount of social support back, especially in light of our previous discussion on coping styles.

There may be something about the traditional caregiving role that leads to vulnerability. A brief investigation of gender, ethnicity and this role will again highlight the complexity of the interaction between vulnerability factors. Studies with members of varying cultural groups have suggested that the gap between PTSD symptoms in men and women is higher in societies that are more traditional (Norris et al., 2002a). Norris et al. (2001) conducted a study using a sample of non-Hispanic White and Black Americans affected by Hurricane Andrew and Mexicans affected by Hurricane Paulina. In all cultural groups, women reported more PTSD symptomology than men. However, this gap was

widest in the Mexican sample and smallest in the Black sample. Since, when compared to non-Hispanic White American culture, Mexican culture is understood to be more traditional in its adherence to gender roles (Chia, Wuensch & Childers,1994; Davenport & Yurich, 1991), and Black American culture is understood to be more egalitarian in its gender role definitions (Davenport & Yurich, 1991; McAdoo, 1988), the results suggest that women who assume the traditional female role are most vulnerable to post-disaster psychopathology.

Minority or third world ethnicity. Norris et al.'s study with Americans and Mexicans brings us to our consideration of a second vulnerability factor, ethnicity. Post-disaster effects in developing countries tend to be greater than in the U.S. (Norris et al., 2002a), and within the U.S., adult members of ethnic minority groups are more negatively affected by disasters (Norris et al., 2002a; Perilla, Norris & Lavizzo, 2002). Differential exposure to disasters may account for some of these differences. For example, in the U.S., ethnic minority members are often concentrated in the lower income strata and are more likely to live in less safe homes and at risk areas (Quarantelli,1994), increasing their trauma exposure.

Factors beyond the amount of exposure to disaster-related trauma are likely in operation as well. Again, poverty leads to lower access to post-disaster resources for minorities (Kaniasty & Norris, 1995). Also related to low socioeconomic status is a higher pre-disaster exposure to community violence. Similarly, immigrant members of minority groups or individuals who live in developing nations may live or have lived in cultures where they are likely to have experienced trauma. This could include the community or

personal violence that is common in countries characterized by political or social unrest. Previous exposure to community or personal trauma increases the risk of post-disaster psychopathology. For example, Perilla et al. (2002) found that the incidence of neighborhood and personal trauma was higher among the Black and Latino participants in their study, and that the severity of their exposure accounted for much of their higher rates of PTSD post Hurricane Andrew.

There may also be culturally-influenced ways of interpreting or expressing distress that account for the vulnerability of minority groups. Members of an ethnic minority group may have experienced prejudice, discrimination or oppression. These experiences can result in psychological vulnerability in general, but could also be related to the way trauma is expressed. African-Americans, for instance, may, because of experiences of oppression, become hypervigilant to perceived threats and this in turn could result in the expression of certain post-traumatic symptoms (Allen, 1996). The Latino concept of susto, which refers to an experience of fright, is often to what Spanish-speaking individuals attribute any symptoms they experience (Hough et al., 1996; Kirmayer, 1996). The incidence of a disaster is consistent with this cultural concept, as it represents a singular traumatic event to which one can attribute distress. In this way, the expression of PTSD in response to a disaster is quite culturally consistent.

In certain cultures, such as African-American and Latino ones, family ties are emphasized and there is a strong reliance on the family for social support (Chia et al, 1994; Hatchett & Jackson, 1993; Sabogal, Marin & Otero, 1987). As in the discussion of women, disruption to the family or social network that can occur post-disaster can lead both to a

loss of available support for minority group members (Kaniasty & Norris,1997) and to increased stress that comes with the obligation of tending to others' needs. In addition, such a family-orientation can also result in less receipt of outside sources of support (Kaniasty & Norris, 2000).

Fatalism, the tendency to attribute the causes for things to a higher power, such as nature or God, is associated with Latino culture and sometimes with African-American culture (Pepitone & Triandis, 1987). Such a worldview can lead to poor psychological outcomes in response to distress because one's personal power is perceived as minimal (Mirowsky & Ross, 1984; Wheaton, 1982). In an interesting study with children affected by Hurricane Andrew, Lee (1999) found that African-American and Hispanic students often received information about the cause of the hurricane that was inconsistent with Western science, and sometimes consistent with fatalism.

To summarize these vulnerability factors, like features of disasters that contribute to psychopathology, they seem primarily related to the extent of stress experienced, before, during, and after the disaster, and the available resources to deal with it. We have cited, for instance, the findings that both women (Pulcino, et al., 2003) and minority victims (Perilla, et al., 2002; Quarantelli, 1994) may have experienced more trauma before or during the disaster than white males . Resources include material resources, like money and infrastructure of a western vs. third world culture, social resources, like social networks and the way these may impact males and females differently, and coping style resources, which may vary by gender and culture. Understanding risk factors can assist us in designing interventions, both at the individual and community level, for survivors of a

disaster.

Psychological Interventions for Victims

Numerous individuals and organizations have written about disaster planning and interventions from a psychological perspective (e.g., Ehrenreich, 2001; Jacobs, 1995; Roberts, 2000; SAMHSA, 2000). In the panoply of ideas and techniques put forward, a valuable model for looking at psychological interventions for disaster victims is that provided by Caplan (1964), the father of community psychology, who developed the model of prevention of mental disorder. If, as the community psychology model posits, stress is the major cause of psychopathology, the best way of preventing psychopathology is to reduce the stress of the environment. This is primary prevention, and as it applies to disasters, primary prevention places psychology squarely in the process of emergency preparedness. Psychologists, might for instance, help develop campaigns to persuade the public not to build houses in a flood plain, or find ways to increase the public's emergency preparedness through education, or influence legislation that requires insurers to provide disaster insurance or prompt payment of benefits after a disaster. Because psychology has so much to contribute to education and policy development, it is important for emergency managers to involve psychology in all their planning efforts.

Secondary prevention in the Caplan model involves identifying people at risk, and intervening to assist them. As applied to disasters, secondary prevention requires psychologists to conduct rapid screening after disasters and to begin interventions as soon as possible. Again, emergency managers need to include psychologists in the immediate aftermath of a disaster.

This type of prevention is often labeled crisis intervention, an attempt to reduce the stress of a crisis at the time it occurs. Lindemann's (1944) ground-breaking research at the Cocoanut Grove nightclub fire, mentioned earlier, involved helping survivors and the bereaved express their grief, in the belief that this would reduce their later symptoms. Caplan (1964) proposed that a crisis is a turning point, and that individuals in crisis can either cope successfully and thereby enhance their ability to cope, or they can make maladaptive attempts to cope, and thereby decline in their psychological functioning.

As we have noted in the section on vulnerability, the availability of resources is critical to postdisaster adjustment, and Caplan idenified the providing of resources as a major form of crisis intervention. Resources include material resources (for instance, helping victims locate temporary housing after a flood, or locate missing family members) and social resources (for instance, providing emotional support to an individual who lost a family member in the flood, and locating other individuals who can provide support). Social resources may be especially critical for female victims, as we have mentioned. Psychologists should be involved in the allocating of resources after a disaster by emergency managers.

Helping deal with coping resources is another form of crisis intervention. While many models of crisis counseling have been proposed and discussed (e.g., McGee, 1992; Roberts, 2000), most tend to be solution focused, with an emphasis on the victim's strengths and finding appropriate solutions to the problems they face. In general, active problem solving strategies are more effective than passive ones (e.g., Lazarus & Folkman,

1980) One issue for psychologists applying crisis intervention to disasters is that often there are not good solutions to the crisis, regardless of the individual's coping strengths.

One type of crisis intervention, critical incident stress debriefing (CISD), has received a great deal of attention of late. Developed by Jeffrey Mitchell (1982), the model has a strict format and is applied to victims, family members, and especially rescue workers, including fire and police personnel.. It is conducted in groups, and includes seven phases: 1) introduction; 2) facts about what happened in the crisis; 3) thoughts about what happened; 4) feelings about what happened; 5) symptoms; 6) teaching/information about stress and stress management; and 7) re-entry (Mitchell & Everly, 2000). In the next section, we will discuss the effectiveness of CISD.

Traditional psychotherapy falls into the category of secondary prevention. A number of interventions have been developed for victims with PTSD. Similar to strategies for other anxiety disorders, therapists use exposure (e.g., Foa & Kozak, 1986) to require clients to revisit the trauma of the disaster experience. The theory is that in dealing with a traumatic event, we use avoidance strategies to reduce the pain, and these avoidance strategies are part of the symptom picture. More psychodynamic therapists may work to have disaster victims confront their feelings about their experience, using different labels from the behaviorist, but doing similar work.

Usually, cognitive restructuring is also a part of therapy for individuals with PTSD. We have mentioned that disasters lead to a shift in cognitions (Janoff-Bulman and Frieze) and victims of disaster often have distorted beliefs regarding their safety, the likelihood of another disaster, their personal worth, etc.

Many forms of therapy, too numerous to list, have been developed for other disorders, such as depression and anxiety, which may result from disasters. These therapies are not specific to the treatment of postdisaster survivors. It is important that emergency managers be able to provide some forms of therapeutic intervention to victims and responders after a disaster.

Tertiary prevention in the Caplan model involves preventing further deterioration of those already emotionally disturbed, and is less relevant to disaster work. It might apply to long-term victims of disaster, like Vietnam veterans, whose problems persist, and who may need new and as yet undeveloped forms of treatment.

Evaluation of psychological interventions for disaster victims.

Psychology has a long history of evaluation research, again making it an important partner for emergency managers who need to assess the effectiveness of their planning and interventions. Psychologists have investigated the effectiveness of therapeutic interventions for disaster victims with mixed results.

Using the Caplan model for looking at psychological interventions is useful because it provides perspective on the multitude of interventions that are included. Recent focus on the efficacy of Critical Incident Stress Debriefing has taken emphasis away from the many efficacious types of intervention that mental health fields have developed, and perhaps represents a backlash against an overly enthusiastic application of the CISD model. There was little empirical investigation of the efficacy of CISD in its early days. More recently, CISD and other debriefing approaches have been scrutinized

intensely. Here again, the approaches are under investigation for their efficacy with many types of victimization, not just disasters. Mitchell and Everly (2000) argue that the findings are mixed because of the variability of the training and skill of the provider. Many studies, however, have found no positive results beyond that of a placebo condition (Humphries & Carr, 2001; Rose, Brewin, Andrews & Kirk, 1999) or no treatment (Conlon, Fahy, & Conroy, 1998; Kenardy, Webster, Lewin, Carr, Hazell, & Carter, 1996). Some studies with randomized assignment to groups have actually found that trauma victims who underwent debriefing showed higher levels of symptoms than those who did not (Bisson, Jenkins, Alexander, & Bannister, 1997; Mayou, Ehlers, & Hobbs, 2000). This issue has even reached the popular press: an article in the New Yorker focused on the lack of benefit of debriefing for individuals suffering from reactions to the September 11 attack on the World Trade Center (Groopman, 2004), and the New York Times featured an article about the inappropriateness of psychological help for non-Western victims of disasters (Satel, 2005). A number of reviews (Arendt & Elklit, 2001; Ehlers & Clark, 2003; Emmerik, Kamphuis, Hulsbosch, & Emmelkamp, 2002; Litz, Gray, & Adler, 2002; Raphael, 2000) conclude that the lack of benefit for debriefing after disasters means it should be used cautiously, never be compulsory, and that further research is necessary.

Since CISD has been the primary technique used post-disaster, these findings have thrown the whole issue of psychology's ability to understand and help disaster victims and responders into question. It is important to note that psychotherapy itself is effective (Lambert and Ogles, 2004), and has been effective in treating PTSD (Marks, Lovell, Noshirvani, Lavanou, & Thrasher, 1998). There are several possible explanations for this disparity between the effectiveness of CISD and psychotherapy in treating PTSD. 1)

CISD may be too short-term and unfocused to have enough of an impact. 2) Psychotherapy may need to be adapted to the particular situation of disaster victims 3) There may be characteristics of disaster that are different from other traumatic stress, making intervention more difficult. We will take each of these explanations in order.

CISD is an extremely short-term form of treatment. Reviews which compare debriefing with cognitive behavioral therapy (CBT) (Litz, et al., 2002; Ehlers & Clark, 2003) show that CBT is more effective in ameliorating trauma symptoms, perhaps because it is longer term and more focused on symptoms.

CISD is also a treatment provided mainly by other disaster workers, trained in the process, rather than by professional psychologists, although professionals certainly sometimes provide CISD. Barker & Pistrang (2002) argue convincingly that the processes of social support and psychotherapy are overlapping and should be conceptualized in similar ways. For instance, the outcome of professional helping seems to be no more helpful than paraprofessional helping (e.g., Faust & Zlotnick, 1995). Hogan, Linden and Najarian (2002) review 100 studies on social support intervention and conclude that they in general are helpful, although we do not know which kinds of interventions work best for which problems. It seems logical to suppose that there are disaster interventions that would be helpful when administered at the time of the crisis by paraprofessionals, although further refining of approaches is obviously necessary.

New approaches to disaster are being developed. A relatively new and controversial therapy for PTSD is Eye Movement Desensitization (EMDR), which involves controlled eye movements back and forth while the client is thinking about the

trauma which occurred. Empirical findings are mixed (e.g., Taylor, Thordarson, Maxfield, Federoff, Lovell, & Ogrodniczuk, 2003). The explanatory mechanism for why the technique should work is involved and many psychologists find it unconvincing. For victims of fire, Krakow, Melendrez, Johnston, et al. (2002) described a sleep dynamic therapy, involving psychoeducational approaches about sleep, and found that both sleep disturbances and other anxiety and depressive symptoms lessened. Basoglu, Livanou & Salcioglu (2003) report that a single session with an earthquake simulator diminished symptoms of traumatic stress in earthquake victims. Smyth, Hockemeyer, Anderson, et al. (2002) administered the task of writing about victimization experiences in Hurricane Floyd, and found that it reduced the relationship between intrusive thoughts and symptoms, not as dramatic a finding as that of Pennebacker and Harber (1993) who had earlier reported that writing down one's feelings about a disaster can ameliorate symptoms. Lange, Rietdijk, Hudcovicova, van de Ven, Schrieken, & Emmelkamp (2003) have incorporated writing tasks into an Internet treatment for posttraumatic stress, which they report as successful. Newner, Schauer, Klaschik, Karunakara and Elbert (2004) describe an effective narrative exposure therapy for PTSD in Sudanese refugees, in which participants replayed the events of their life until they formed a coherent narrative. Pitman, Sanders, Zusman, et al. (2002) report that propranolol administered to victims of trauma interferes with memory of the event and ameliorates the potential for PTSD.

The issue of special characteristics of disaster which make psychological interventions more problematic should be addressed. Individuals in a disaster are more likely to see their needs as physical and real rather than as emotional, especially in a non-Western culture (Satel, 2005). Emotional problems may only emerge years later, as

with many Vietnam veterans. It may be that psychologists, in their work with other emergency managers, need to educate individuals about possible emotional reactions, rather than stepping in to try to intervene too quickly with those who are not in search of services.

We have already noted that most psychological efforts are directed to helping individuals develop active coping strategies, rather than passive, fatalistic ones. It is sometimes the case in disaster, however, that there are no active strategies to take. One issue which has not been sufficiently discussed is that of individual styles and needs. Fullerton, Ursano, Vance, & Wang (2000) reported that female emergency workers were three times more likely than males to seek out debriefing. Our previous discussion of gender differences in vulnerability would suggest that women may be in special need of social support services postdisaster. Roth and Cohen (1986) discuss the fact that individuals seem to have preferred styles for either avoiding or approaching stress, and that these styles are difficult to change. Both avoidance and confrontation can be helpful depending on the circumstances. Most psychologists, going back as far as Lindemann, assumed that individuals need to confront the trauma of a disaster. It may be that enabling individuals to avoid effectively is just as useful, especially when the trauma is severe and there is little that can be done to change the situation.

Another issue is the perception that needing and taking help from a psychologist is stigmatizing. Jenkins (1998) reports, for instance, that co-workers were the most frequently sought out resource (by 94% of emergency workers dealing with a mass shooting) and the most consistently useful source of emotional support. Although

counselors were equally effective, only 50% of victims sought them out. Again, education from psychologists about the possible emotional consequences of disaster could normalize this process, and make it easier for victims to seek help. It may also be that forms of paraprofessional intervention, other than CISD, need to be developed.

Gray, Maguen and Lidz (2004) point out that current crisis interventions focus on PTSD and its prevention, and that the wide range of victim responses, which we have reviewed earlier, demands a more nuanced and individuated range of treatments. Few interventions have been tailored to the needs of children (Wooding & Raphael, 2004), and it is possible that many interventions for children need to be addressed to their parents (Norris, 2001).

In summarizing psychology's achievements in understanding and dealing with disaster, the following seem clear. Disasters can cause severe psychological disturbance, with many victims experiencing PTSD, depression and anxiety. More research is needed to determine the entire range of disorders and the frequency of their occurrence after disaster. The severity and duration of the disaster will predict much of the extent of the reaction. Vulnerability factors in the individual do play a part, with gender, age, previous level of psychopathology, poverty, ethnicity and social support correlating with extent of post-disaster psychopathology in victims. These variables interact in complex ways. Mental health fields intervene both pre-disaster in emergency planning and post-disaster in crisis intervention, debriefings, psychotherapy, and evaluation of emergency management efforts. Recent research has questioned the usefulness of single session debriefings, but there is support for longer-term interventions and there is the

promise of new types of interventions for disaster victims.

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