

THE PSYCHOLOGICAL CONSEQUENCES OF NATURAL DISASTER: A REVIEW OF RESEARCH ON AMERICAN COMMUNITIES*

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For decades social scientists have been unable to reach consensus regarding the psychological consequences of natural disasters. Although most researchers acknowledge the existence of the widely documented “disaster syndrome” – a “dazed” state common in the immediate post-impact period – this seems to mark the limit of agreement. Over the past four decades, two identifiable and essentially opposing positions have evolved. One position holds that natural disasters constitute catastrophic life events which produce adverse psychological reactions among victims. These reactions are seen as problematic both immediately post-impact and throughout the long range; possibly encompassing a period of several years or perhaps the victims’ entire remaining life span. The empirical support for this perspective came initially from psychiatric interpretations of natural disasters (Tyhurst, 1957a, 1957b; Menninger, 1952), was buttressed by a series of sociological studies of tornadoes (Moore, 1958a, 1958b; Moore and Friedsam, 1959; Moore, et al., 1963) and has recently gained support from studies of flood victims (Lifton and Olson, 1976; Titchener and Kapp, 1976).

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The competing position suggests that although some individuals experience adverse reactions to natural disaster, the extent of negative psychological consequences has been greatly overstated. It is acknowledged that psychological reactions frequently occur in the short-run (to a maximum of a few weeks post-impact), but these researchers argue that apparent longer-run reactions are infrequent and probably a function of a variety of factors, among which disaster impact is only one. This point of view can be traced to Charles Fritz: early analysis of the National Opinion Research Corporation (NORC) disaster studies (Fritz and Marks, 1954; Fritz, 1961) and is supported by numerous studies which have involved a variety of disaster agents – e.g., floods, hurricanes and tornadoes (cf. Drayer, 1957; Bates et al., 1963; Quarantelli and Dynes, 1977; Drabek and Key, 1976; Erickson et al., 1976; Sterling et al., 1977; Taylor, 1976; Fritz and Williams, 1957).

The competing positions, therefore, rest upon the apparently contradictory findings of empirical studies. In such cases, one usually examines the controversy by first assessing the quality of the research designs (e.g., asking methodological questions) and second by reviewing the *theoretical* underpinnings of each competing view, comparing basic assumptions, logical adequacy, parsimony, internal consistency, etc. (cf. Shrag, 1967, p.220). The controversy surrounding the psychological

impact of natural disaster, however, seems to have developed largely in the absence of formal theory. This is not to say that *rationales* haven't been offered; they have come from advocates of each position. For example, initially Fritz (1961) and later Barton (1969) suggested the concept of the "therapeutic community" as an important factor in minimizing adverse psychological reactions. What is lacking on both sides though, is an explicit, formal, theoretical framework which could guide the directions of scientific inquiry and against which empirical findings may be evaluated (cf. Perry and Gillespie, 1976, pp.48–49). Furthermore, in the absence of such a theoretical structure, exchanges among proponents of different views tend to become laden with rhetoric; with no conceptual standard against which to evaluate empirical studies, there is little basis for resolving apparent inconsistencies.

The present paper critically examines the empirical stalemate produced by the unresolved and apparently competing research findings and attempts to clarify the relationship between natural disaster and psychological disorder. This will be accomplished by reviewing the theoretical context of natural hazards research and proposing a conceptual model or framework for understanding the psychological consequences of natural disaster. The initial task involves investigating the nature of the problem, and in so doing we shall pursue three basic queries: What is the theoretical context (often implicit) for existing natural disaster research? What definition of psychological disorder has been used in past studies of mental health in disaster? What are the appropriate research questions when examining the relationship between natural disaster and psychological disorder?

THE NATURE OF THE PROBLEM

Most disaster researchers have based their investigations on the proposition that any psychological disorder is the outcome of stress

caused by the disaster. Although stress is an important integrating concept, the study of stress crosses the boundaries of many disciplines and may focus on different conceptual levels of analysis – we talk of stress as it impinges upon individuals or complex organizations or even whole societies. To enhance communication and make research findings more readily comparable, it is necessary to specify the way in which stress is characterized, as well as the appropriate level of analysis. For the most part, disaster researchers have not given much explicit attention to these matters, making it difficult to draw upon the results of related stress research where some natural disaster was not involved; for example, medical studies of stressful life events.

In different literatures, stress has been treated as a stimulus (Rasmussen, 1973 pp.4–8); as a response (Selye, 1956); as an inner state (Modlin, 1966; Horowitz, 1974); and as an organism-environment transaction (McGrath, 1970 p.14; Lazarus, 1966). Most studies of natural disasters have used the last mentioned approach and defined stress in terms of the transactions between some organism (very broadly characterized) and its environment. In one of only a few theoretical pieces, Allen Barton (1969) argues that natural disaster impact alters the nature and quantity of "inputs" to a social system, thereby producing changes in the nature of the "demands" made upon the constituent elements of the system. This "demand-adaptation model" has been widely used in studies of natural disaster and appears to be effective whether the focal system elements are individuals (Fritz and Marks, 1954); families (Bolin, 1976); established organizations (Dynes, 1970); emergent organizations (Perry et al., 1974); communities (Haas et al., 1977); or societies (Lessa, 1964). Therefore, the natural disaster itself is not equated with stress. Natural disasters cause changes in social systems which, in turn, require system elements to adapt to different demands. In this context, stress can be understood in

terms of the exchanges which occur between the *altered* social system and its *adjusting* components. Hence, the basic model to be examined links the three central constructs as depicted in Fig. 1.

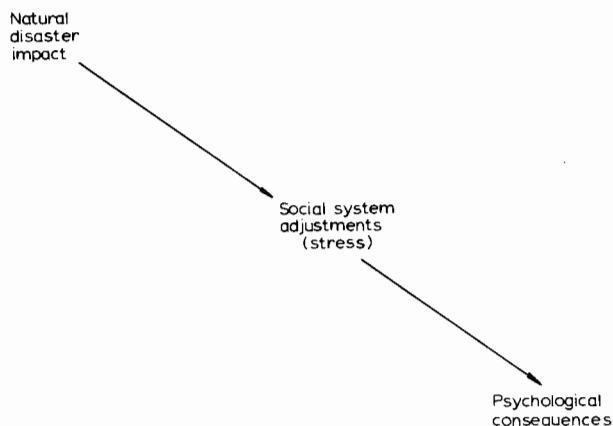


Fig. 1. Relationships among disaster impact, stress and psychological consequences (arrows represent temporal paths).

Our second query pursues further the task of identifying the phenomena to be studied; namely deciding what is meant by “psychological consequences”. Again, in the disaster literature, only scant attention has been given to this problem. Usually, definition is either left implicit and the phrase “mental illness” used to cover the widest range of meanings, or among empirical studies some operational definition of “psychological consequences” is equated with an observable measure — e.g., victim self-report, interviewer diagnosis, admission to care, etc. This is not to suggest that one should undertake the herculean, and probably impossible, task of “rectifying” the numerous, disparate theories of psychopathology and create a single definition of mental illness. It is essential, however, when evaluating studies of the psychological consequences of natural disaster, to carefully attend to specific definitions and operationalizations, as well as the underlying conceptions of psychopathology.

Many conflicting claims regarding the rela-

tionship of natural disaster and mental illness may be resolved by acknowledging that researchers have used different conceptions of psychopathology in designing studies and consequently have chosen different measurement strategies which tend to yield uncomparable results. Those who have found a correlation between disaster and mental illness have tended to employ a psychodynamic perspective, which directs concern with anxiety states, subjective unhappiness and other maladjustment evident through psychiatric diagnosis (cf. Scott, 1958 p.29). Further, these studies depend largely upon victim self-report and clinical interviews as measures of psychological consequences. On the other hand, studies which have not found a strong relationship between disaster and mental illness tend to use a behavioral model of psychopathology sensitive to individuals’ maladaptive behaviors, usually measured by rating scales, observers reports or admissions to psychiatric care (Ullman and Krasner, 1970 p.327; Wilson, 1962).

One should be aware that the above mentioned “measures” are sensitive to different aspects of human behavior and constitute different criteria for establishing the presence of psychological consequences. Thus, it is *not* appropriate to assume that they are acceptable *equivalent* indicators of mental disorder. Instead of interpreting the empirical findings as conflicting, then, one should conclude that the different measures employed offer evidence that some types of psychological reaction are common following natural disaster and other types are not. Hence, we have much evidence that people usually answer in the affirmative when consequences are “defined by the victims themselves in response to the question, ‘Have you noticed any emotional stress among family members as a result of the disaster?’” (Moore and Friedsam, 1959 p.136). When the psychological consequence of interest is admission to psychiatric care, however, it is evident that this reaction is rare and that few victims of natural disaster seek such institutional help

(cf. Bennet, 1970 p.456; Bates et al., 1963). Thus, careful review of the measurement strategies of existing empirical studies directs attention away from the problem of apparently conflicting findings and toward the more productive task of cataloging the nature and frequency of different types of psychological consequences associated with natural disaster. Furthermore, by focusing upon the measurement of observable psychological *consequences*, there is also the advantage of avoiding the conceptual and definitional stalemate which arises when one attempts to derive an acceptable operationalization of "mental illness" (cf. Bandura, 1969 pp.9–19).

Given the preceding discussion of the nature of stress and psychological disorders, it is apparent that simple models (such as that depicted in Fig. 1) are not particularly useful for understanding the psychological consequences of natural disaster. It has been argued that an essentially post hoc methodology in combination with a low emphasis upon theory construction has contributed to the perpetuation of an oversimplified view of the problem; namely that disaster is a direct and unconditional cause of mental illness (cf. Lifton and Olson, 1976). The perspective which appears to appropriately address the problem sees disaster as a contributory cause; as one of a number of factors which together determine psychological consequences. The remainder of this paper focuses upon the specification and elaboration of a conceptual model of the factors which effect the psychological consequences of natural disaster.

CONCEPTUAL ISSUES IN PSYCHOLOGICAL CONSEQUENCES

Recent research conducted by Thomas Drabek and his colleagues (Drabek et al., 1975; Drabek and Key, 1976; Erickson et al., 1976; Sterling et al., 1977) has outlined a conceptual framework to explain the effects of disaster impact upon the health self-

perceptions of victims. Using a similar perspective, we shall attempt to expand upon and formalize this approach by concentrating on channels through which natural disasters impinge upon individuals and by introducing additional detail when specifying relevant theoretical dimensions.

We shall order the presentation of our framework by considering specific factors which lie within three theoretical dimensions: (1) characteristics of the disaster impact; (2) characteristics of the social system; and (3) characteristics of the individual. In the sections which follow, each dimension will be addressed in turn and literature supporting the inclusion of specific factors will be reviewed. Finally, the full model will be assembled and discussed.

Characteristics of Disaster Impact

One of the most integrated and detailed schemes for a typology of collective stress situations was devised by Allen H. Barton (1969). In developing his typology, Barton convincingly argues for the primary importance of three aspects of disaster which mediate the social and physical consequences of disaster impact: forewarning, duration, and scope of impact. Whether or not some threat is detected and forewarning is *possible* largely depends upon technological issues (Mileti, 1974 pp.9–11). Even if the disaster agent is detected, forewarning can occur only if an adequate message dissemination system exists for delivering the warning to the threatened population. In terms of the consequences of disaster impact, warning permits time (the precise amount of which may vary greatly) for preparations and safeguards which can to some extent: (1) reduce deaths and injuries; (2) decrease the destruction of kin and friendship networks; and (3) reduce property damage (Williams, 1964 pp.97–102). Also, as Fritz and Marks (1954 p.35) have indicated, an adequate period of forewarning permits a degree of "psychological preparation" for the disaster impact.

The idea of “duration” references the time involved as well as the character of disaster impact. Time, however, is the critical dimension. Whether duration is long because of multiple or many secondary impacts (such as in urban snow disasters in the United States) or because of a long steady impact (e.g., a severe drought), the result is the same: a long duration “may gradually drain resources and lower aspirations so that the whole system moves toward a less satisfactory equilibrium, or toward collapse as a system ... a brief duration disaster still may have long-lasting injury and destruction, but relief and recovery can be carried on unhampered by further impacts” (Barton, 1969 p.40). Again, the longer the duration of impact, the greater is the chance that kin and friendship networks will be disrupted and the greater the likelihood of property damage.

Scope of disaster impact refers to a primarily geographical dimension: how large is the impact area. The obvious correlates of increasing scope are increases in the sheer number of people who can be affected and increases in the absolute amount of property exposed. Among natural disaster agents, hurricanes tend to have a large scope of impact while tornadoes tend toward a limited scope. It should be pointed out that all three factors reviewed here correlate with *type* of disaster agent, especially when we are interested in natural disasters. Therefore, we have treated these factors as characteristics of disasters which have implications for other classes of variables more directly related to psychological consequences.

Characteristics of the Social System

While characteristics of the disaster tend to affect psychological consequences indirectly, variables which measure characteristics of the social system more often involve direct effects. From the research literature, we have selected seven factors which are characteristic of social systems and which have been found to mediate

the psychological impact of natural disaster: level of community preparedness, presence of a disaster subculture, development of the therapeutic community, destruction of kin networks and friendship networks, the extent of property damage, and presence of institutional rehabilitation. These factors are inter-related and will be discussed in terms of the *patterns* of these interrelationships.

Level of community preparedness describes the state of emergency preparations undertaken by communities, including any planning for the management of disaster impact, as well as plans for post-impact reconstruction. The level of community preparedness affects (either directly or indirectly) all of the other factors discussed as social system characteristics. Initially, it should be noted that level of preparedness is related to the presence of disaster subcultures (cf. Anderson, 1965). Disaster subcultures tend to develop in communities which routinely experience disaster (e.g., places exposed to seasonal floods or tornadoes) and may be described as organized groups of individuals coordinated in advance of disaster impact, who undertake some form of pre- or post-impact ameliorative activities. Such activities include groups which routinely help make and lay sand bags in flood-prone communities (Anderson, 1965) and groups which routinely participate in a search and rescue capacity. As Drayer (1957 p.154) has pointed out, such subcultures arising in response to “recurrent natural disasters lend themselves well to adequate psychological preparation of the population, particularly if the disasters have a tendency toward seasonal periodicity with enough frequency to give each succeeding generation some degree of personal experience with them”. Furthermore, high levels of preparedness and the presence of disaster subcultures tend to correlate with the development of a “therapeutic community” reaction (cf. Fritz, 1961 pp.688–692). Barton (1969 p.207) suggests that the therapeutic community reaction “helps to compensate for the

sorrow and stress ... with an unexpected abundance of personal warmth and direct help". As described in the literature, the therapeutic community represents informal mass social and physical support; victims are rescued, sheltered and reassured by fellow community members. It should also be pointed out that this informal response "supports action by the public [formal] authorities and large-scale organizations devoted to relief and reconstruction" (Barton, 1969 p.283). Therefore, the development of a therapeutic community reaction enhances the opportunity for formal and informal psychological support for victims in both the short and long run (cf. Roen et al., 1966; Quarantelli and Dynes, 1972).

It was mentioned previously that the level of community preparedness was inversely related to the destruction of kin networks and friendship networks. Kin networks are here conceived in terms of people's interaction and exchange patterns with their kinsmen. Numerous studies of community disaster report that intense kin relationships are highly supportive and promote post-disaster recovery success among victims (Drabek et al., 1975 p.486; Bolin, 1976 p.268). Thus, to the extent that kin networks are destroyed, one should expect negative psychological consequences for victims.

The effects of destruction of friendship networks are very similar to those described in relationship to kin networks. In both cases, we are describing the stress-buffering role of social support (Dean and Lin, 1977). Friendship networks refer to peoples' patterns of interaction with friends (and/or neighbors). Barton (1969 pp.63–124) has pointed out that intact friendship networks ensure victims' access to much post-impact aid; since relatives only infrequently live adjacent to one another, immediate aid is likely to come from victims' friendship networks. It has also been argued that when both kin and friendship contacts are available, kin relationships are more important

in victims' successful adaptation, especially in the long run (Drabek and Boggs, 1968). Nevertheless, in the short run, or when kin bonds are weak or absent, the role of friendship networks is an important one.

Finally, it has also been pointed out that level of community preparedness varies inversely with the extent of property damage. If we think of property in anthropological terms as our culture inventory, it must be acknowledged that material things play an important role in peoples' definitions of self (Wallace, 1961, pp.171–193). In examining reactions to disaster, Wallace (1957, p.23) suggests "the sudden perception of physical destruction of the natural environment and material culture with which one is identified seems to elicit fundamentally the same paralytic [psychological] response ...". Thus, widespread destruction of property can produce negative psychological effects in the short run. The extent of property damage is also related to the nature, amount and speed of institutional rehabilitation made available to stricken communities. In general, the greater the damage, the more extensive is the institutional aid (loans, donations, etc.) which flows to the community from external sources (Haas et al., 1977). Evidence also suggests that the presence of extensive institutional rehabilitation serves to reduce negative psychological consequences among victims in the long run (Fogleman and Parenton, 1959 pp.133–135).

Characteristics of the Individual

Two factors which are characteristics of individuals are particularly important in understanding the psychological consequences of natural disaster: pre-impact psychological stability and grief reactions. In our earlier discussion of epidemiological concepts, it was indicated that many of the "after-only" research designs "found" a direct link between disaster impact and mental disorder only because they could neither control nor assess

pre-impact psychopathology. In general, if an individual is psychologically unstable *before* disaster impact, he will remain so *after* impact. The only qualifier needed here is that a few investigators have reported that *some* “unstable” individuals (particularly those diagnosed as senile) have been shown to *briefly* exhibit “stable” behavior (usually task-oriented helping actions) in natural disaster circumstances. Since this finding has not been consistently reported and in each case the individual quickly reassumes a “mentally ill” role, it is here acknowledged as an intriguing anomaly.

Perhaps, one of the most prominent sources of psychological disorder, whether chronic or acute, is the death or severe injury of a kinsman or a close friend. In the case of natural disaster where death or injury can occur during a short time span *and* one may even witness the event, the psychological consequences for survivors may be tremendous (Fritz and Marks, 1954 p.40). In discussions of various stress response syndromes in reaction to natural disaster, psychiatrists have paid surprisingly little attention to grief reactions (cf. Horowitz, 1974; Lifton and Olson, 1976; Titchener and Kapp, 1976; Kastenbaum, 1974). Bugen (1977) has developed a theoretical model for understanding human grief reactions which is based upon the pioneering work of Lindemann (1944). Bugen contends that the *intensity* and time duration of psychological reactions associated with grief may be characterized in terms of two dimensions (see Table I). The closeness of the survivor's relationship to the deceased and the survivor's perception of the preventability of the death. Thus, when the relationship is central (in the case of ones' spouse) and the death was preventable (e.g., if the couple were warned but failed to evacuate prior to a hurricane), one would expect the survivors reaction to be intense and prolonged. Other conditions yield different reactions. What this implies for disaster research is that one must assess the nature of relationship and

TABLE I

Typology of grief reactions by closeness of relationship and preventability of death (adapted from Bugen, 1977 p.197)

Closeness of relationship	Preventability of death	
	Preventable	Unpreventable
Central relationship	Intense and prolonged reaction	Intense and brief reaction
Peripheral relationship	Mild and prolonged reaction	Mild and brief reaction

perceptions of preventability to understand a survivor's psychological reaction. Although both concepts exist in the disaster literature (cf. Crawshaw, 1963), they are not often juxtaposed and have not previously been used in any integrated conceptual framework. The concept of grief reactions of different intensity and duration begins to shed some light on psychiatric studies which offer conflicting claims about the longer-term psychological consequences of exposure to disaster deaths (cf. Kastenbaum, 1974). When one takes Bugen's model into account, the fact that some survivors suffer longer-duration disturbances than others is readily explainable.

THE CONCEPTUAL FRAMEWORK

We have now examined three dimensions relevant to understanding the channels through which natural disasters impinge upon the psychological stability of individuals (victims). Twelve important factors have been isolated and literature related to each has been reviewed. The emphasis however, has been upon conceptualization and organization. The review of literature was not intended to be exhaustive since such reviews are available elsewhere (cf. Barton, 1969; Dynes, 1970; Mileti et al., 1975). Our purpose was to sort out findings and summarize data which specify

interrelationships among the factors included in the theoretical framework.

Two additional points should be made before presenting the full conceptual model. First, this work should not be confused with the presentation of a causal theory; to describe it in such terms would be misleading. Instead, we are beginning the process of theory building, not completing it. We have examined empirical findings, inductively constructed images of time order and made inferences about possible relationships among factors.

The second point relates to our treatment of demographic variables – age, sex, socio-economic status, race, etc. The only other recently published theoretical efforts in this area (Sterling et al., 1977; England and Kunz, 1977) explicitly include demographic variables in their models. We acknowledge the role of demographic variables in matters such as the definition of appropriate grief reactions and perceptions of kin and friendship networks. In the interest of clarity of presentation, however, we have elected to leave demographics *implicit* in our model. In most sociological and social psychological theory, demographics may be taken as given; in this case it is acknowledged that demographics should be included as exogenous variables prior to any testing of the conceptual model.

Figure 2 shows the interrelationships among the twelve factors that we have considered and their direct relationships to adverse psychological consequences. In keeping with conventions in the research literature, we have used three boxes to represent psychological consequences, divided in terms of time into initial, later and long-term consequences. “Initial psychological consequences” begin in the time period immediately post-impact and are considered to last approximately one week. It is during this period that virtually all investigators have reported finding evidence of “the disaster syndrome” which was described in detail by Wallace (1957 p.23). “Later psychological consequences” describes the period running from about one week post-disaster through the following six months. “Long-term psychological reactions” refers to the period which begins six months post-impact and continues for the remainder of the victim’s life. In the discussion which follows, we shall examine the role of the relevant factors in producing an adverse psychological response in each of the three time periods.

As previously indicated, initial psychological consequences usually take the form of the well-known disaster syndrome. Wallace (1957 p.23) describes the symptomology in three stages: initial shocked or dazed behavior, followed by

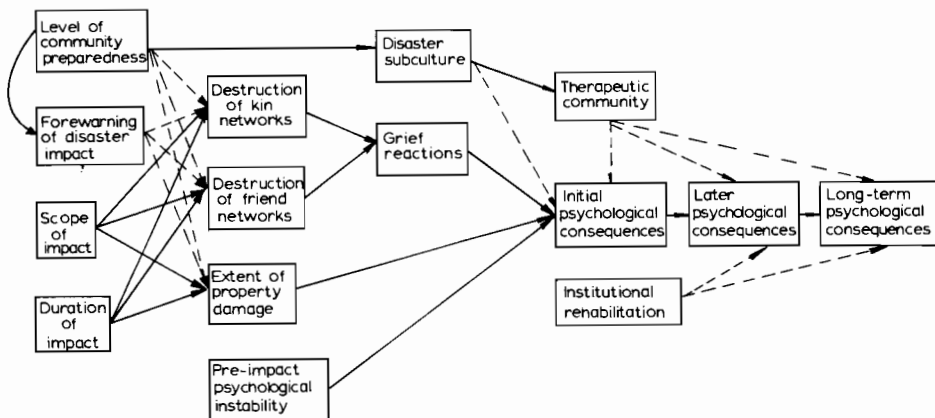


Fig. 2. Interrelations of factors important in understanding psychological consequences of natural disasters (solid arrows represent positive relationships, broken arrows represent inverse relationships).

a generalized anxiety state characterized by docility and obedience, and finally a state of mild euphoria sometimes alternating with mild depression. Drayer (1957), Fritz and Marks (1954) and Lindemann (1944) all agree that these behaviors should be considered "normal" disaster reactions as long as they remain relatively temporary in nature and do not persist beyond the initial period. In terms of our conceptual framework, the disaster syndrome is primarily a function of the destruction of social support networks (kin and friends) and maze disintegration due to property loss (cf. Wallace, 1957). In most cases, the victim adapts to these losses in a relatively short time and resumes a pattern of successfully coping with the environment (Lazarus, 1966). Severely negative psychological reactions in the initial period may arise as a function of two factors: pre-impact psychological instability or a grief reaction. Pre-impact psychological instability can produce disaster related psychopathology if one takes a process view of symptom etiology and characterizes disaster impact as a precipitating event. Such reactions are usually labeled post-traumatic neuroses and "represent a previously incipient neurosis brought on by the traumatic disaster experience or ... the victim's realization, subsequent to the disaster, of personal mutilation or of marked negative changes in his life situation" (Goldstein, 1960 p.55). It is to be emphasized that adverse psychological reactions of this type tend to persist and show up in the "later" and "long-term" periods depicted in Fig. 2.

Grief reactions constitute the second major source of negative psychological consequences in the "initial" period which can persist into the "later" and "long-term" periods. The important point here (drawn from Bugen's model) is that *some* grief reactions will run their full course in the initial period, e.g., in the case of the *unpreventable* deaths – whether the relationship to the survivor is peripheral or central (see Table I). Longer-term grief reactions are to be expected when the survivor perceives

that the death was preventable; these reactions have been documented to persist for considerable time periods when the victim's relationship to the survivor is central (cf. Bugen, 1977 p.202).

SUMMARY AND CONCLUSIONS

The previous discussion focuses upon negative psychological consequences which might accrue from the impact of natural disasters. It is meant to suggest that under specified conditions it is *possible* that some individuals could experience negative psychological consequences. At the same time, we have tried to emphasize that most disaster studies – particularly those conducted by researchers operating within the medical model – are not designed in a way that permits them to detect *disaster-related* psychological disorders.

Furthermore, it should be pointed out that negative psychological consequences tend to be the exception rather than the rule. Many studies of communities following disaster impact indicate that some people are better off as a result of the experience (for summaries of such data see Fritz, 1961; Barton, 1969; Quarantelli and Dynes, 1972; Taylor, 1976). Empirical studies of short-term psychological consequences suggest that negative reactions are quite rare – helping-oriented activities, the absence of panic, self-reliance and resource-sharing instead dominate as short-term responses (cf. Quarantelli and Dynes, 1972; Kinston and Rosser, 1974). Also, research indicates that, although well documented and described, the "disaster syndrome" in fact afflicts only a very small proportion of victims. As for evidence of longer-term psychological reactions (whether positive or negative), the number of available empirical studies – using an acceptable methodology – is limited. Research based upon records of admissions to psychiatric treatment following disaster have indicated that such admissions typically decline rather than increase (Bates et al., 1963;

Bennet, 1970). Sterling et al. (1977), using perhaps the only quasi-experimental research design yet reported in the disaster literature, found that victims of a tornado disaster showed no longer-term negative effects. Thus, the available empirical evidence suggests that long-term negative psychological reactions are rare, if not nonexistent. The apparent recent exception is the case of Buffalo Creek where Kai Erikson (1976) and others (Rangell, 1976; Titchner and Kapp, 1976; Lifton and Olson, 1976) argue that victims did experience numerous traumatic reactions. It should be indicated, however, that these studies are based upon a medical model of psychiatric disorder, rely upon a methodology subject to considerable argument and represent a single case (cf. Taylor, 1976 pp.279–280).

The primary purpose of this paper, however, is not to argue that there are negative or positive psychological consequences of natural disasters. Instead, we have presented a conceptual model which isolates important variables and specifies the channels through which disaster impact impinges upon individuals and might produce some psychological consequences, either positive or negative. The conceptual framework is advanced in a spirit of tentativeness; it is a working model. The value of this model lies in the fact that it represents an explicit attempt to conceptualize and integrate existing empirical knowledge.

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