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Psychological Adaptation of Anxiety Disorder Patients Following Repeated Exposure to Emergency Situations

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Thirty one patients in treatment for anxiety disorders and 31 controls were interviewed within hours after both the first and second Iraqi missile attacks on Israel during the Gulf war. After the first attack patients did not report higher anxiety levels, nor were they more pessimistic about the war and their fate in the war than the control subjects. Anxiety disorder patients tended to be engaged in cognitive-behavioral tactics for self-calming, while control subjects clearly preferred to cope by interacting with their social and physical environments. Following the second missile bombardment, patients were more inclined to retain their initial levels of anxiety and pessimism, while controls seem to have better adapted and showed significant improvements in those variables. The results are discussed in terms of coping skills and vulnerability as factors influencing adaptation to prolonged emergency situations.

KEY WORDS: emergency; The Gulf war; anxiety disorder; adaptation; coping styles.

The effects of stress associated with major life events on the psychological well-being of individuals have been documented in major reviews on the subject (Melick, Logue, & Frederick, 1982; Rabkin, 1982; Rabkin & Klein, 1980; Rabkin & Struening, 1976). The past decade has also seen a rapid growth in the literature on the processes by which people cope with stress. Much of this research is based on conceptualization offered by Lazarus (1966) and later developed by Lazarus and Folkman (1984). Coping is construed as

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part of three interacting processes: (a) primary appraisal—a process of perceiving a threat to oneself, (b) secondary appraisal—the process of bringing to mind a potential response to the threat; and (c) coping—the process of executing that response. Coping was described as distinguished by two major strategies (Lazarus, 1985): (a) problem-focused coping aimed at changing a damaging or threatening relationship between person and environment; and (b) emotion-focused coping, designed to reduce or manage the emotional distress that is associated with the situation. Research showed that most stressors elicit a mixture of both types of coping. However, when people appraise a stressful situation as permitting little to be done, they tend to use more emotion-focused coping, and when they assess it as allowing constructive actions, a pull toward problem-focused coping is noted. The laboratory research of Folkman and Lazarus (1980) has also generated some time-related implications. For example, when a given type of stress must be encountered repeatedly, emotion-focused coping such as denial, will prevent ultimate mastery. Although such a coping strategy can have positive value at an early stage of coping when the person's resources are insufficient to cope in a more problem-focused manner, when actually facing a real danger, it is best to move towards constructive action to minimize the threat to oneself.

Coping and Emotional Maladjustment

There seems to be a universal agreement among investigators of etiology in psychiatric disorders that stress is a relevant consideration in illness onset (Rabkin, 1982). How genetic/biological, psychological and socioenvironmental factors influence each other to create different psychological outcomes following trauma is not yet fully understood. Dohrenwend and Dohrenwend (1981) suggested that psychiatric disorder will be triggered by exposure to stress in already vulnerable people who may also be deficient in such resources as ego strength, social supports or personal coping skills. Scheier, Weinstaub, and Carver (1986) have asserted that optimists may do better than pessimists because they use strategies that pay off. They have shown that people who have unfavorable expectancies focus on these anticipations and the subjective stress associated with them. There is some empirical evidence to indicate that pessimism increases the likelihood of future symptom reporting, thus constituting a potential psychological vulnerability to stress. Previous research has shown that a great number of cases of pathological grief occur in widows and widowers who have psychiatric records. McFarlane (1988) reported that neuroticism and a history of psychological dysfunction were factors associated with the development of posttraumatic stress disorder among fire fighters exposed to a fire disaster.

Coping with Disaster

Studies on the psychological sequels of trauma and disaster indicate that the exposure to such stressors may be associated with an increase in such psychological symptoms as anxiety, depression and anger (Kinston & Rosser, 1974; Logue, 1978; Melick, 1976; National Institute of Mental Health [NIMH], 1976). Most of the previous research on the psychological outcome of disaster has focused on people's somatic and psychological reactions. Such were the studies published on the Three Mile Island nuclear accident (Baum, Gatchel, & Schaeffer, 1983), the Mount St. Helens volcanic eruption in 1980 (Shore, Tatum, & Vollmer, 1986) and the collapse of the Hyatt Regency skywalk (Wilkinson, 1983). The last study is part of beginning new interest in the specific coping processes people use in adjusting to traumatic experiences. Both Wilkinson (1983) and Collins, Baum, & Singer (1983) who studied late psychological effects of the Three Mile Island accident, found that survivors employed primarily emotion-focused coping strategies, apparently because problem-focused coping was no longer relevant once the traumatic event was over.

The 1991 National Emergency in Israel

The massive collective threat inflicted on the Israeli population during the 1991 Gulf War provided an opportunity for a controlled prospective study of the effects of on-going major external stressors on a clinical population. This war exposed the Israeli urban population to air-raid bombardments for the first time since Israel's War of Independence in 1948. On January 18, 1991 the first of many Iraqi missile salvos launched at Israel hit the greater Tel-Aviv and Haifa metropolitan areas, causing considerable property damage. Complying with Civil Defense instructions, citizens refrained from rushing to their air raid shelters and instead sought protection in previously prepared sealed safe rooms inside their homes in anticipation of chemical warfare. These sealed rooms, it was soon recognized, could not withstand the impact of conventional warhead missile explosions. Indeed, all incoming Iraqi missiles carried conventional warheads, thus exposing the population to the dangers of the detonating explosive charges carried by them. In addition to these perils, for the first time in human history an entire civilian population of one country was exposed to threats of an impending poisonous gas attack. For the predominantly Jewish population of Israel, the exposure to genocidal gassing threats from a hostile totalitarian regime was a particularly troubling reminder of the people's experience during World War II. Adding to the population's stress was the

fact that, during the period of data collection, the time lag between the sounding of the air-raid sirens and the missiles' impact on the ground had not been longer than 90 sec. This warning time was insufficient for proper shelter taking.

Crisis Research: Methodological Concerns

Most of the literature published so far on the psychological effects of large-scale emergency and trauma situations is characterized by post hoc investigations, primarily because the stressful events were short-term and usually unpredictable (Ben-Zur & Zeidner, 1991). Many methodological difficulties prevent adequate assessment of the relationship between past stressful life events and subsequent psychological reactions. The longer the periods of recall, the greater the rate of forgetting of the details of the experience (Jenkins, Hurst, & Rose, 1979). Prior experiences can also be distorted by current perceptions. This problem is of particular concern when bias of memory is caused by psychopathology. Current coping can be projected on past coping, and recent onset of symptoms is sometimes telescoped to during or after the disaster. Retrospective research outcome should, therefore, be interpreted with caution. Very little data are currently available on the coping styles and quality of adaptation of the general population and of psychologically vulnerable people in times of crisis; neither do we know much on the relationship between previous vulnerability, preferred coping behaviors and psychological adaptation to stress during prolonged or repeated emergency situations.

Research Goals and Hypotheses

The major purpose of this study is to compare coping styles and quality of psychological adaptation to the stress of repeated exposure to emergency situations of two subject groups: a) people sampled from the general population, and b) anxiety disorder patients. The present research sets out to study coping tactics and psychological adaptation to acute traumatic stress at the actual time of the event. Based on previous stress and coping literature we hypothesized the following. Immediately following the first missile impact and compared to control subjects:

(a) patients were predicted to report higher levels of anxiety and somatic stress phenomena,

(b) patients were predicted to be more pessimistic than control subjects,
(c) more patients were predicted to employ emotion-focused tactics while more control subjects were predicted to utilize problem-focused activities as coping methods,
(d) control subjects were predicted to exhibit better adaptation than patients to the repeated missile strikes.

Method

Subjects

Thirty-one Hebrew speaking, Jewish, Israeli patients receiving psychotherapy for a variety of anxiety disorders at the Haifa and Tel-Aviv offices of the Israel Institute for Treatment and Prevention of Stress and thirty-one control subjects were interviewed. Our subjects had met DSM-III-R diagnostic criteria for panic disorder with agoraphobia (11 patients), generalized anxiety disorder (9), claustrophobia (8), and social phobia (3). They were in therapy for an average period of 10 months (SD = 12.07, range: 1–60). The control subjects were picked from a pool of 201 subjects randomly selected from the telephone book for a separate study. The control group was not screened for psychiatric disorders. It, therefore, represented a sample of the general population. The two subject groups were controlled for the following variables: nationality (only Israeli Jews were interviewed), mastery of Hebrew language (only Hebrew speaking subjects were included), sex, age and level of education. Both patient and control groups were identical in terms of age (M = 34.2, SD = 10.2), and average number of years of education (M = 13.9, SD = 1.1). Both groups had an identical gender distribution (9 males and 22 female subjects each).

Although the Tel-Aviv metropolitan area sustained the greatest physical damage during the Gulf War, both Haifa and Tel-Aviv were hit by the first missile salvo and were considered to be prime targets for the Iraqi missiles at the onset of the military crisis. We interviewed 29 citizens of Haifa (16 anxiety patients and 13 control subjects) and 28 citizens of the Greater Tel-Aviv Metropolitan Area (14 patients and 14 controls). None of our subjects lived in any of the 2000 apartments that were actually damaged by the missile explosions. For the subjects of this study, the stressor was the threat, not the disaster.

Procedure

At the time the data for this study were collected, civil defense instructions required a 24-hr curfew for the entire civilian population. To prevent loss of time-relevant information, we decided to use the telephone as the only timely means of data collection available.

The telephone interview questionnaire was thus developed a few hours after the first six Iraqi Scud missiles hit the cities of Tel-Aviv and Haifa in the early morning of January 18, 1991. It was administered by the authors and their research assistants immediately afterward. Both patients and controls seemed to be very happy to have been given the opportunity to talk and share their feelings with the interviewers, thus a 100% response rate was achieved. Following the second missile salvo, fired at Israel the next day, we called up our subjects again for a brief follow-up interview in which they were asked to report their level of anxiety and their assessed likelihood for another attack and for their chances of being injured in it. Eighty seven percent of our patient group (n = 27) agreed to be interviewed again, compared to 97% of our control group (n = 30).

The Instrument

Each subject was asked 20 questions some of which were used for a separate study. The interview questionnaire was designed to assess the following main variables:

- demographic data (e.g., age and sex)
- anxiety related symptomatology measured on a 4 point scale ranking of perceived anxiety, tachycardia, muscle tension and tremor and headaches.
- coping style (Two open questions were used: "what thoughts passed through your mind?" and "Did you try to calm yourself, down, . . . and if so how?")
- subject's assessment of the chances for another immediate missile attack and of the probability for getting hurt by the impact (stated in percentages).
- Subjects' belief that poison gas penetrated their residence (yes or no).

Coping responses were content-analyzed by one of the authors. Factors were primarily based on the current coping literature and incorporated seven conceptually distinct groups of behaviors. Two were specifically based on Ways of Coping, an instrument developed by Folkman and Lazarus

(1985). Other categories reflected later findings that had pointed out that responses to the Ways of Coping Scale form several factors rather than the dichotomy of problem vs. emotion-focused coping (Aldwin & Revenson, 1987; Scheier et al., 1986). Four of our categories corresponded with factors of the COPE Scales (Carver, Scheier & Weintraub, 1989): Instrumental activity (active coping), Encouraging self-talk (positive reinterpretation and growth), Prayer (turning to religion), and Pleasant imagery distraction (mental disengagement). Some of our subjects displayed two unique types of responses which we also include in our categorization: telling of jokes and joking about the situation, which we termed Humor; and Autorelaxation. The other two authors later classified separately the reported coping responses by the seven categories of behavior. Although no statistical inter-rater reliability was calculated, agreement between the raters appeared to be very high. The final categorization of coping responses was achieved by consensus.

The subjects' assessment of their anxiety level, and the chances for both another missile bombardment and their chances to be injured in the bombardment were the data gathered at the second telephone interview.

Results

Patients were compared with control subjects on 30 different variables. To avoid an exaggeration of the quantitative size of the effects defined in this study, a Bonferroni correction was employed. Thus, only a significance level of 0.05/30 = 0.0017 was considered as a minimal criterion to establish a statistically significant effect.

Even though all the ground to ground missiles launched at Israel carried conventional explosive war-heads, when asked immediately after the first bombardment whether they thought poison gas was penetrating their homes, 12 stress patients (19%) responded in the affirmative compared to 5 (8%) control subjects. This noticeable trend was not significant at the required 0.0017 level. The Spearman correlation coefficients between the anxiety levels following the first attack and the false identification of gas in their homes was r = .36 (N.S.) for the control subjects and r = .56 (p < .0017) for the patient group.

Contrary to our first hypothesis, following the explosions of the first missile salvo, patients did not differ from controls as far as their reported anxiety related symptomatology levels were concerned (e.g., the mean perceived anxiety was 2.70 and 2.74, respectively, on a 4 point scale). We could not corroborate our second hypothesis because our patients were not significantly more pessimistic in their assessment of the chances for another

immediate missile attack (the proportions were 75% and 63%, respectively) or of the likelihood of a personal injury in the event of such an attack (15% and 12%, respectively).

Table 1 presents the extent to which various coping methods were reported to have been used by both patients and controls. Noteworthy is the fact that only one of the 31 patients employed instrumental, problem-focused activity (e.g., improving the sealing of the shelters) as a preferred coping method, compared with 11 control subjects who responded with this behavior ($p < .0017$). A similar trend was noted when patients were compared with controls on the usage of such non-instrumental activities as keeping the children busy in the shelter (0 and 8, respectively; $p = 0.0046$). No other coping variable met the conservative Bonferroni criterion. These results corroborate our third research hypothesis and seem to complement recently published results indicating that emotion-focused coping tends to be positively related to anxiety and physical symptoms (Zeidner & Ben-Zur, 1992).

Although immediately following the first missile impact patients and controls reported similar anxiety levels, the two groups responded differently after the second round of missiles hit. On the ordinal variables of anxiety and on the serial variables of the estimated likelihood for further missile attacks, a Mann-Whitney test was applied for comparing the two groups regarding their reaction to one attack. The Wilcoxon signed rank test for matched pairs was used for comparing the reactions in the different attacks within the same group. Our patients' reported mean anxiety score rose from 2.70 following the explosions of the first missile salvo to 3.07 after the second attack. Our control subjects showed a decrease in their mean reported anxiety scores, from 2.74 after the first attack, to 2.07 following the second round of explosions. This clear trend ($p = .0023$) also falls slightly short of our conservative Bonferroni criterion. These findings presumably contributed to a significant difference in the reported mean anxiety levels between the patients ($M = 3.07$) and controls ($M = 2.07$) following the second SCUD attack ($p = .0004$). A logistic model of statistical analysis on the mean reported anxiety scores revealed that the interaction between the time of measurement (after the first or second attack) and the group (patients and controls) contributed significantly to the prediction of the dependent variable ($p = .0015$).

When the mean estimated probabilities for yet another imminent missile attack was measured, we found that following the first explosive impact there were no significant differences between the groups (patients: 75% and controls: 63%). The two groups seemed to have responded differently to the second round of missile explosions. We found that the patients' estimated probabilities for yet another attack did not change significantly fol-

Table 1. Coping Methods Reported to Have Been Employed During the First Missile Attack: A Comparison of Frequencies by Group[a]

Variable	Encouraging Self-talk	Pleasant Imagery Distraction	Autorelaxation	Humor	Prayer	Intrumental Activity	Noninstrumental Activity
Patients	$n = 12$	$n = 7$	$n = 10$	$n = 1$	$n = 1$	$n = 1$	$n = 0$
	39%	23%	32%	3%	3%	3%	0%
Controls	$n = 5$	$n = 1$	$n = 2$	$n = 2$	$n = 2$	$n = 11$	$n = 8$
	16%	3%	6%	6%	6%	35%	26%
p	.086	.053	.022	1.000	.492	.001	.005

[a]Fisher's exact test.

lowing the second event (M = 68%). The control subjects, on the other hand, did significantly reduce their estimated chances for an additional attack (M = 47%, p = .0003). The differences between patients and controls in the mean estimated probability for continued bombardments measured after the second attack yielded a significant group effect (p = .0008).

Although patients and control subjects reacted similarly when asked to assess their own risk for getting injured in a missile attack following the first event (M = 15% and 12%, respectively), a Mann-Whitney test revealed a different response pattern when this variable was measured again after the second missile salvo was fired at Israel. The patients' estimated personal risk was then 13% compared with only a 5% risk assessed by the control subjects, (p = .0006).

Discussion

Israel, claimed Lazarus (1982), is a natural laboratory for the study of psychological stress. The 1991 Gulf War gave further credence to this statement and provided us with an opportunity to study under real-time conditions differential coping styles and related adaptation to acute repeated stress as employed by anxiety disorder patients and control subjects. The hasty conditions under which this study was designed are reflected in a few of its limitations. For instance, under the circumstances of repeated missile bombardments and the curfew imposed, it was impossible to screen the community sample for psychiatric illness. This means that approximately 20% of our control group may have been similar to the investigated patients. Although one could assume that any significant group effect found under these circumstances might have been even stronger under better controlled conditions, we suggest that our results should, nevertheless, be considered as preliminary. Another reason that calls for a cautious interpretation of our results is associated with our instrument. The need to keep the telephone lines open during the crisis prevented us from engaging in lengthy interviews. Our instruments were, therefore, very brief, and the data collected rather limited. The statistical reliability of our coping categories adds some more difficulty in conclusively presenting our findings. We believe however, that the results of this study seem to suggest that people who are in therapy for anxiety disorders may not report higher levels of pessimism and anxiety related symptomatology than subjects representing the general population, when facing a community emergency situation. This counter-intuitive finding is not consistent with our first two predictions. The paucity of research on the behavior of anxiety disorder patients in times of community disaster precludes comparisons to previous

studies. Janis (1969) has claimed that during wartime, emotional disturbances occur among people who undergo near-miss experiences. That severe emotional disturbances can surface as a result of exposure to bombardments, has been found by Fraser, Leslie, and Phelps (1943). They showed that 40% of the civilians who were personally affected by the London blitz responded with serious neurotic disorders. No study known to us has investigated the emotional responses of civilians who had been diagnosed as suffering from emotional problems prior to the onset of hostilities. The main problem with our patient population was that they had been in treatment for an average period of 10 months. Although none of them were ready to terminate therapy when the hostilities broke-out and all were still suffering from the consequences of their disorders, they had received at the time the data were collected an average of 10 months of counseling on coping with stress and anxiety. One cannot rule out the possibility that newly acquired skills may have been put to use. The fact that the patients were coping with a real, shared external stressor might have also contributed to this outcome. In contrast to abnormal anxiety, where fear is often irrational and is typically characterized by constant anticipation of a personal negative outcome, here the threat was objective and thus possessed a rational fear component that rendered more normal their otherwise pathological distress. The fact that others around them experienced similar fears possibly added a sense of a shared experience and of interpersonal cohesion which might have also aided their coping. Spielberger (1975) has identified the ambiguity surrounding the concept of anxiety, due to indiscriminate reference to a state, a trait and a process. State anxiety was described by Spielberger (1975, p. 137) as subjective, consciously perceived feelings of tension, apprehension and nervousness which are transient and occurring as a function of perceived stress. Thus both control subjects and patients may have responded with elevated state anxiety, blurring the differences in anxiety process (trait anxiety) between groups.

The data appear to be consistent with our predictions in showing significant differences in the preferred coping style of patients and controls. Our patient group tended to be more inwardly oriented during the crisis. They were more inclined to be emotion-focused, monitoring and managing their psychological reactions, rather than problem-focused. We also found that among the patients, there was a significant relationship between reported anxiety and the misidentification of poisonous gas. This finding sheds more light on data reported by Bleich, Dycian, Koslowsky, Solomon, and Wiener (1992) who found that most casualties hospitalized following the first missile attack on Israel were diagnosed as suffering from either an anxiety syndrome, or symptoms related to unjustified self-injection of atropine, the nerve gas counteragent. The cyclical nature of the psychody-

namics of anxiety can point at a probable contributing explanation of this result. Attention and perception of anxiety patients is selective (Wolitsky & Wachtel, 1973) and tends to include such cognitive processes as magnification—the tendency to catastrophize (Ellis, 1962) and arbitrary inference—a process of drawing conclusions when evidence is lacking (Beck, 1972). This cognitive bias in anxiety disorder patients suggests that our emotion-focused patients may have magnified the perceived threat, may have misinterpreted their own sympathetic arousal and may have arbitrary inferred that they had been poisoned by nerve gas. Such appraisals can generate further sympathetic arousal thus maintaining or exacerbating the cycle of anxiety.

These results seem consistent with the findings reported by Hamilton, Keilin, Knox, and Maginez (1989), and by Zeidner and Ben-Zur (1993), who reported that subjects high in negative affectivity tended to engage in emotion-focused coping. While anxiety patients in therapy and controls may have adapted similarly to the first emergency, the second missile bombardment yielded a significant group effect. The patients' level of anxiety and pessimism had not changed after the second attack. The control subjects on the other hand showed definite signs of adaptation. We believe the results of this study are in line with Dohrenwend and Dohrenwend's (1981) vulnerability hypothesis because they demonstrate that although the availability of learned coping skills may prevent rapid decompensation under external stress in vulnerable persons, they may not be quite sufficient for the promotion of adaptation and the prevention of a possible exacerbation of emotional dysfunction.

Examination of the differential coping styles of patients and controls may help in the design of intervention strategies with at-risk groups in emergency situations. A trauma is commonly defined as a situation in which someone feels completely powerless. However, when an opportunity for personal initiative does exist it seems beneficial to the coping process if one is active during the event (Kleber & Brom, 1992). This is something the control subjects were and the patients were not. There most likely exists a bidirectional relationship between coping and anxiety. We believe that engagement in both instrumental and noninstrumental activities during the alarm situation helped our control subjects feel that their fate and the well-being of their loved ones could be positively influenced by their own actions. The resulting sense of control of their destiny may have helped them to better adapt (Lefcourt, 1980). We think that such activities provided our control subjects with social approval, and a sense of camaraderie that our autorelaxing, inwardly-oriented patient group subjects may have missed. Furthermore, external focusing may have helped our control subjects distract themselves from maladaptive cognitive activity and from their psycho-

physiological arousal, thus creating a positive feedback loop. Conversely, our patients' use of emotion-focused rather than problem-focused coping might have been responsible for the failure of their anxiety to decline from the first to the second attack. Our findings seem to be consistent with previous research in the trauma literature. For example, Gleser, Green, and Winget (1981) found that the best predictor for men of their later psychopathology following the Buffalo Creek flood was whether they cleaned their homes, repaired them, and gave personal help to others. Stone and Leime (1984) reported that 48% of the activist citizens at Love Canal said that they had been negatively affected by the crisis, compared to 73% of the non-activists.

Conclusion

This study may provide further support to the claim that psychologically vulnerable persons may not cope as well with prolonged or repeated external traumatic stressors as healthy controls would, thus rendering them more susceptible to resulting psychopathology. Our findings have noteworthy implications for emergency mental-health intervention because they may have identified a potential at-risk group for psychological decompensation due to a diminished capacity for adaptation in prolonged or repeated emergency.

This study has also determined that activities associated with one's interaction with both one's physical and social environments are the coping methods more commonly utilized by the more adaptive subjects. These findings have important implications for the planning of both inoculative pre-traumatic intervention as well as for the management of at-risk groups during and immediately following the traumatic event. An interesting question for further research is how will training anxiety patients in externally oriented problem-focused coping strategies enhance their endurance under prolonged stressful circumstances.

References

Aldwin, C., & Revenson, T. A. (1987). Does coping help? A reexamination of the relation between coping and mental health. *Journal of Personality and Social Psychology, 53,* 337-348.

Baum, A., Gatchel, R., & Schaeffer, M. (1983). Emotional, behavioral, and physiological effects of chronic stress at Three Mile Island. *Journal of Consulting and Clinical Psychology, 51,* 565-572.

Beck, A. (1972). *Depression: Causes and treatment.* Philadelphia: University of Pennsylvania Press.

Ben-Zur, H., & Zeidner, M. (1991). Anxiety and bodily symptoms under the threat of missile attacks: The Israeli scene. *Anxiety Research, 4,* 79-95.
Bleich, A., Dycian, A., Koslowsky, M., Solomon, Z., & Wiener, M. (1992). Psychiatric implications of missile attacks on a civilian population. *The Journal of the American Medical Association, 268,* 613-615.
Carver, Ch. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology, 56,* 267-283.
Collins, D. L., Baum, A., & Singer, J. E. (1983). Coping with chronic stress at Three Mile Island: Psychological and biochemical evidence. *Health Psychology, 2,* 149-166.
Dohrenwend, B. S., & Dohrenwend, B. P. (1981). Life stress and illness: Formulation of the issues. In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), *Stressful life events and their contexts.* New York: Watson.
Ellis, A. (1962). *Research and emotion in psychotherapy.* New York: Lyle Stuart.
Folkman, S., & Lazarus, R.S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior, 21,* 219-239.
Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: A study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology, 48,* 150-170.
Fraser, R., Leslie, I., & Phelps, D. (1943). Psychiatric effects of severe personal experiences during bombing. *Proceedings of the Royal Society of Medicine, 36,* 119-123.
Gleser, G. C., Green, B. L., & Winget, C. (1981). *Prolonged psychosocial effects of disaster: A study of Buffalo Creek,* New York: Academic Press.
Hamilton, S. B., Keilin, W. G., Knox, T. A., & Naging, J. L. (1989). When thoughts turn towards nuclear war: Stress responses, coping strategies and the importance of trait anxiety in moderating effects on mental health. *Journal of Applied Social Psychology, 19,* 111-139.
Janis, I. L. (1969). *Stress and frustration.* New York: Harcourt Brace Jovanovich.
Jenkins, C. D., Hurst, M. W., & Rose, R. M. (1979). Life changes: Do people really remember? *Archives of General Psychiatry, 36,* 379-384.
Kinston, W., & Rosser, R. (1974). Disaster: Effects on mental and physical state. *Journal of Psychosomatic Research, 18,* 437-456.
Kleber, R. J., & Brom, D. (1992). *Coping with trauma.* Amsterdam/Lisse: Swetz & Zeitlinger B.V.
Klein, D. F. (1980). Anxiety reconceptualized. *Comprehensive Psychiatry, 21,* 411-427.
Lazarus, R. S. (1966). *Psychological stress and the coping process.* New York: McGraw-Hill.
Lazarus, R. (1982). The psychology of stress and coping. In D. D. Spielberger, I. G. Sarason, & N. A. Milgram (Eds.), *Stress and anxiety* (Vol. 8, pp. 23-36). New York: Hemisphere.
Lazarus, R. S. (1985). The costs and benefits of denial. In A. Monat & L. S. Lazarus (Eds.), *Stress and coping: An anthology* (pp. 154-173). New York: Columbia University Press.
Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping.* New York: Springer.
Lefcourt, H. M. (1980). Locus of control and coping in life's events. In E. Staub (Ed.), *Personality: Basic aspects and current research* (pp. 220-236). Englewood Cliffs, NJ: Prentice Hall.
Logue, J. N. (1978). *Long-term effects of a major natural disaster: The Hurricane Agnes flood in the Wyoming Valley of Pennsylvania.* Doctoral dissertation, Columbia University.
McFarlane, A. C. (1988). The aetiology of posttraumatic stress disorders following a natural disaster. *British Journal of Psychiatry, 152,* 116-121.
Melick, M. E. (1976). *Social, psychological, and medical aspects of stress-related illness in the recovery period of a natural disaster.* Doctoral dissertation, State University of New York at Albany.
Melick, M. E., Logue, J. N., & Frederick, L. H. (1982). Stress and disaster. In L. G. Goldberger & S. Breznitz (Eds.), *Handbook of stress: Theoretical and clinical aspects* (pp. 615 New York: The Free Press.
National Institute of Mental Health. (1976). *Disaster assistance and emergency mental health.* DHEW publication No. (ADM) 76-327. Washington, DC: US Government Printing Office.

Rabkin, J. G. (1982). Stress and psychiatric disorders. In L. G. Goldberger & S. Breznitz (Eds.), *Handbook of stress: Theoretical and clinical aspects* (pp. 566-584). New York: The Free Press.
Rabkin, J. G., & Klein, D. F. (1980). Stress and phobic disorders: Review of empirical findings and research recommendations. Paper prepared for the Stress and Illness Panel of the Steering Committee for Research on Stress in Health and Disease, National Academy of Sciences, Washington, DC.
Rabkin, J. G., & Struening, E. (1976). Life events, stress and illness. *Science, 5,* 573-624.
Scheier, M. F., Weintraub, J. K., & Carver, Ch. S. (1986). Coping with stress: Divergent strategies of optimists and pessimists. *Journal of Personality and Social Psychology, 51,* 1257-1264.
Shore, J. H., Tatum, E. L., & Vollmer, W. M. (1986). Psychiatric reactions to disaster: The Mount St. Helens experience. *American Journal of Psychiatry, 143,* 590-595.
Spielberger, C. D. (1975). Anxiety: State-trait-process. In C. D. Spielberger & I. G. Sarason (Eds.), *Stress and anxiety* (Vol. 1). Washington, DC: Hemisphere.
Stone, R. A., & Leime, A. G. (1984). *Reactions to collective stress: Correlates of active citizen participation at Love Canal.* Paper presented at the Annual Meeting of the American Psychological Association, Toronto.
Wilkinson, C. B. (1983). Aftermath of a disaster: The collapse of the Hyatt Regency Hotel skywalks. *American Journal of Psychiatry, 140,* 1134-1139.
Wolitsky, D., & Wachtel, P. L. (1973). Personality and perception. In B. Wolman (Ed.), *Handbook of general psychiatry,* Englewood Cliffs, NJ: Prentice Hall.
Zeidner, M., & Ben-Zur, H. (1993). Coping with a national crisis: The Israeli experience with the threat of missile attacks. *Personality and Individual Differences, 14,* 209-224.