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Personality, Emotions, and Hypertension

Everyone knows that when you are angry, your blood pressure is apt to rise. Elevation of the blood pressure is apt to occur as a consequence of any form of stress, but the degree and duration varies with each of us. The relationship between emotions, stress, and blood pressure has intrigued investigators for decades. However, the scientific study of such associations has been hampered by a variety of factors. The objective measurement of emotions is not as precise as that which can be achieved for other stimuli. There are similar difficulties in assessing the multiple traits that contribute to personality. Further, it has not been clearly demonstrated that exaggerated or sustained elevations of blood pressure which may occur in some individuals as a consequence of responses to daily stress, or even talking, eventually lead to fixed hypertension.

Efforts to characterize or delineate the "hypertensive personality" are complicated by the observation that what we label as "essential hypertension" is not a distinct entity but merely the recording of a persistently elevated blood pressure that may have many different causes. This is further illustrated by the multiplicity of drugs and strategies currently required to treat "essential hypertension." Thus, patients respond with great variation to diuretics, beta blockers, calcium channel antagonists, angiotensin converting enzyme inhibitors, or non-pharmacologic approaches such as stress reduction, salt restriction, or calcium supplementation. If essential hypertension can have many different etiologies, then it is unlikely that we will find a personality pattern common to all. On the other hand, careful psychophysiological investigations could reveal distinctive patterns of response that might provide some insight into separating or classifying emotional correlates or substraits of hypertension in different patients.

A recent attempt in this direction was reported in a Swedish follow-up study of some 63 28-year-old men. They were selected from a record of the medical draft examinations of all 18-year-old men some 10 years previously. Fifty-six of this group were hypertensives, 27 were normal, and 23 had lower than normal blood pressures. The subjects participated in two days of physiological tests and interviews during which they measured their own blood pressure at hourly intervals. The interviews involved discussion of four emotions: anger, sorrow, anxiety, and joy. The interviewers did not know the blood pressure status of the participants and all were tape recorded and subsequently evaluated by a rater not otherwise involved in the study. The results appeared to confirm earlier suggestions that hypertensives tend to suppress their emotions. Normotensives were able to express sorrow to significantly more people than hypertensives and their coping responses were also more appropriate. Hypertensives seem to experience less joy than

(Continued on page 2)

ALSO INCLUDED IN THIS ISSUE

For further information on the original source of abstracts and other reprints available on similar subjects, please send a self-addressed stamped envelope to: Reprint Division, American Institute of Stress, 124 Park Avenue, Yonkers, NY 10703.

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Paul J. Rosch, M.D., F.A.C.P.
Editor-in-Chief

Personality, Emotions and Hypertension (Continued from page one)

others. The inhibition of anger, especially at work, appeared to be associated with hypertension but again was influenced by a variety of factors such as anxiety, social support systems, and other coping variables. These observations, together with other research, suggests that we should shift our focus away from an attempt to correlate static traits of personality with hypertension to a more dynamic approach which reflects differences in person-situation interactions and examines the differences in coping mechanisms.

Selected Life Events And Cancer

Attempts to rate stress in terms of life change events generally place death of a close family member or loss and other important emotional relationships at the top of the list. A variety of studies reveal that widowed or divorced individuals have higher death rates due to cancer than married controls. It has been shown that bereavement may be associated with a decline in those immune system defenses responsible for resistance to malignant growth. Stress and loss of major emotional relationships, especially in childhood, have also been considered to be risk factors for the development of cancer.

A recent German study was designed to further explore such possible relationships. Over five hundred women with cancer were compared with over 1,500 controls with respect to the frequency of four different life events: (1) death of the father during childhood; (2) death of the mother during childhood, (both before the age of 16); (3) divorced, separated, or widowed at any time; (4) at least one traumatic World War II experience. It was postulated that if some association exists between childhood traumatic life events and subsequent cancer risk, then such relationships should be evident in this population of females born in the late '30s or earlier who were subjected to traumatic events during World War II. The results revealed that death or separation from a spouse and the death of the mother during childhood were significantly associated with increased risk of cancer. Interestingly enough, no such association was found with respect to the death of the father. This is consistent with other studies which concur that loss of the mother has a far greater effect on a child's development.

The likelihood of cancer was greatest in those who had lost their mothers at an early age, with breast cancer being the predominant malignancy. Admittedly, a variety of other pertinent factors could not be examined in this study such as whether the loss of a spouse (separation, divorce, or death) might have occurred after the development of the disease. In addition, the influence of hereditary and environmental factors which could have played a role could not be evaluated. There was also some association between the development of cancer and the number of exposures to a traumatic event such as damaging air raids and being buried alive. Relative risk increased from 1.25 in patients with one such experience compared to 2.76 in those experiencing 7 events. Death of a close relative, other than a parent, was not associated with a higher incidence of cancer. The researchers suggest that the most likely explanation was a decline in immune system resistance to cancer as a consequence of the stress of bereavement and traumatic events. However, other factors, such as impaired nutrition and altered lifestyles following the death of the mother, could not be excluded.

"An expert is someone who knows some of the worst mistakes that can be made in his subject, and how to avoid them." — W. Heisenberg

One Out of Five Hypertensives Misdiagnosed Because Of Stress

At a recent International Hypertension meeting in Japan, ambulatory blood pressure monitoring reports from around the world suggested that perhaps 20-30% of diagnosed hypertensives are really quite normal and healthy when their blood pressures are examined with this technique. During sleep, the blood pressures of these hypertensives and normals drop so much that there is practically no difference between the two groups. The studies also confirm that hypertensives have their highest pressures during stress at work or while under examination in a medical facility. In patients with borderline hypertension, exercise training significantly lowered waking blood pressures, but not those during sleep. Normotensive individuals showed relatively little difference in pressures taken at home or in the clinic, although a significant reduction did occur during sleep. One Japanese investigator concluded that "in urban male hypertensives, situations under regular daily work may cause larger blood pressure elevations than in normotensives. In addition to this, blood pressures during work, and of 24-hour mean, correlated strongly with left ventricular hypertrophy. Therefore, it seems important for those hypertensives to reduce their daily "stress" during their work . . ."

In one study from Italy, intra-arterial ambulatory blood pressure monitoring was performed on 18 normotensive volunteers and 12 borderline hypertensive patients in their mid-30's. Both groups demonstrated significantly higher ratings in the office setting but in 5 of the 12 borderline hypertensives, the 24-hour blood pressure averages fell into the range of that seen in normotensive volunteers.

"For God's sake, stop researching for a while and begin to think." — Sir Walter Hamilton Moberly

Blood Sugar Changes in Close Relatives of Patients with Cancer

Elevation of the blood sugar is commonly seen in the acute fight or flight response as a consequence of increased sympathetic nervous system and adrenal activity. Such changes may be transient and are also influenced by genetic, dietary, and muscular activity patterns. Measurement of the sugar content of the red blood cell (glycosylated hemoglobin) indicates the average level of blood sugar over a period of several weeks and, therefore, might provide a more accurate relection of the effect of chronic stress on blood sugar levels. In one report of elderly institutionalized men and women, glycosylated hemoglobin measurements were made before and after the institution of a program of social activities and contacts designed to reduce the psychological tension associated with social isolation. The level of glycosylated hemoglobin decreased in those who participated in the program, whereas no similar improvement was seen in controls. An elevated glycosylated hemoglobin level implies that the average blood sugar has been elevated over the previous several weeks. In the absence of other confounding influences such as marked variation in diet or the administration of certain medications, a rise in glycosylated hemoglobin might be expected in situations associated with increased sympathetic adrenal activity and thus indirectly represent a measurement of psychological tension that causes such changes.

A recent Swedish study examined 26 individuals who were under severe stress because of grief and tension associated with a disabling malignancy in a close relative. Over the period of observation, approximately half of the patients with cancer died. The relatives were studied at approximately monthly intervals. On each occasion, their psychiatric state was evaluated by means of interview techniques and standard measures designed to rate anxiety, depression, and mental exhaustion. In addition, glycosylated hemoglobin levels were measured. In general, these values proved to be greater than average. However, a high level of anxiety during the course of a close relative's cancer illness was associated with still further increases. Such changes were not statistically significant when examined in terms of a relationship for degree of depression. These findings are consistent with the suggestion that anxiety is more apt to cause increased sympathetic adrenal activity than other forms of stress such as depression.

While diabetics were excluded from this particular study, it was suggeted that carbohydrate metabolism may be even more significantly affected by anxiety in such patients. The influence of emotional stress on the precipitation or aggravation of diabetes has been well documented and appears to be supported by the present study. When stable diabetics go out of control, it is usually due to factors related to diet, activity, infection, or medication. If the change in status cannot be explained by any of these influences, then the possibility of stress and particularly anxiety should be carefully investigated.

"Friendship has one quality that renders it indissoluble and doubles its delight, a quality that love does not possess: certainty." — Honore De Balzac

Why Is Hostility Associated With Poor Health

Type A behavior has been associated with an increased incidence of heart attacks and possibly other disorders. This behavioral pattern consists of several components including extreme aggression, time urgency, competitiveness, and easily aroused hostility. In recent years, it has been suggested that the hostility component is the most important with respect to predicting cardiovascular disease. Most of the research in this area has been based upon the Cook and Medley Hostility (Ho) scale which is derived from responses to the Minnesota Multiphasic Personality Inventory (MMPI), a questionnaire which has been in widespread use for several decades.

A variety of studies have shown that when the health records of students who scored high on the Ho scale some 25 years earlier were reviewed, there was a subsequent significant increase in coronary heart disease and overall mortality. In 10 and 20 year follow-up studies of almost 1,900 males, Ho scores were found to predict the incidence of cardiac deaths and heart attacks after 10 years. At 20 years they were predictive of deaths due to coronary heart disease as well as all other causes. This relationship proved significant even when adjusting for other risk factors such as age, blood pressure, serum cholesterol, cigarette smoking, and alcohol consumption. However, some researchers have questioned whether or not the Ho scale really is an accurate measurement of easily aroused hostility and suggest that it is more reflective of cynicism, distress, suspiciousness, and resentment. In addition, while increased competitiveness and time urgency would plausibly be associated with increased sympathetic adrenal activity, chronic resentment and distrust would appear to be less likely associated with such physiologic changes and, therefore, presumably would be less likely to result in cardiovascular disease. What then could explain the mechanism of action responsible for the adverse health effects of hostility?

To examine this, over 200 undergraduate students, predominately female, completed the MMPI (from which Ho scales were derived) and were also evaluated in terms of such health habits as physical fitness, self care, nutrition, alcohol, drug, and driving habits. It has been established that factors such as exercise, behavior, nutritional habits, and cigarette smoking are related to the development of heart disease and mortality from other causes. It was postulated that young adults with high scores on the Ho scale might report poorer health habits than low scorers and that possibly this might explain the relationship between hostility and heart disease. The researchers found that the high hostility group did score significantly lower with respect to physical fitness, self care, drugs and driving. There was no significant difference with respect to nutrition in high and low Ho scorers. The authors suggest that poor health habits may partially explain the health hazards of hostility. Conceivably, the cynicism of such individuals extends to life in general, as they adopt a "why bother" attitude to health-related behaviors.

A follow-up study two or three decades from now would be of interest to see if high Ho scorers do in fact have poorer health records. While all the participants in this study were anonymous (except for indicating sex), it is important to recognize that all the results were obtained from self report questionnaires which have certain obvious drawbacks. This is especially true in Type A individuals who frequently deny their behavioral traits or are unaware of them. One suspects that if this research could be expanded to include personal interviews and objective evaluation of health habits, the results might even be more impressive.

Heart Attack or Stress?

Patients with panic attacks not infrequently have symptoms that mimic an acute coronary. Chest pains, palpitations, shortness of breath, rapid heart beat, sweating and dizziness are often so impressive that Emergency Room physicians frequently fail to make the correct diagnosis. It is estimated that 30-40% of all patients complaining of such symptoms suffer from panic attacks rather than heart disease. The problem is complicated by the fact that in some patients who are experiencing an acute heart attack, electrocardiographic changes may not be immediately apparent. On the other hand, many patients with panic disorder may also have an underlying cardiovascular problem such as mitral valve prolapse. In one recent study of 44 patients with mitral valve prolapse, 8 individuals also had a history of panic disorder. When compared with others, these 8 exhibited a more severe form of this disorder and "were inclined to be more anxious, depressed, dramatic, competitive and sensitive to their anxiety" than those with less serious mitral valve prolapse. Some panic attacks can often be prevented or alleviated by antidepressants, antianxiety drugs or beta blockers which block the effects of adrenalin. It has been postulated that mitral valve prolapse occurs in individuals because of increased adrenalin secretion. Over a period of time this can weaken the muscles responsible for mitral valve leaflet function, leading to the irregularities in closure that characterize this condition. Obviously, such excess adrenalin activity could also precipitate the anxiety and palpitations seen during panic attacks, so that the close association of these two disorders should not be surprising.

The Effect of Positive Life Change Events on Symptoms of Depression

One of the earliest attempts to demonstrate relationships between stress and illness was the Life Change Event Scale which was developed several decades ago by Homes and Rahe. Their research was based on the work of Adolph Meyer at Johns Hopkins who, in the early part of this century, noted that clusters of physical illness in his patients seemed to occur in close association with emotionally stressful events in their life. Over the past thirty years, the Life Change Event questionnaire approach has undergone a variety of modifications in order to more appropriately reflect cross cultural differences, or those more sensitive to particular demographic groups based on age, sex, occupation, etc. Another criticism has been that the original scale did not distinguish between negative and positive life change events such as getting a promotion or being fired. However, the notion that positive life change events promote wellness or at least mitigate the illness consequences of distress has become increasingly popular. In recent years increasing attention has been focused on attempts to demonstrate the beneficial effects of such "good" stress.

One example of this may be found in a recent research report from the University of Michigan which examined the influence of positive life events on depressive symptoms in retired individuals over the age of 65 who were living at home. A special 77-item Stressful Life Event Checklist was constructed which graded both negative life events and positive ones based on measurement of the feeling of being in control, the pleasure of being a grandparent, etc. The results indicated that positive life events did appear to promote a sense of well being, although such effects appeared to be limited mostly to those events which involved expansion of family roles. Furthermore, these benefits appeared to be evident primarily in those with an initially high level of psychological distress supporting earlier research reports that a strong social support system reduces depressive thoughts. It is not known whether these findings are also applicable to a younger population. However, they do suggest the need to distinguish between the health effects of negative and positive life change events. It was suggested that we should begin to turn our efforts towards exploring the benefits of the latter, "to move life stress research into a more applied vein."

"Life consists of many little things, but to do them well is a big thing."

— I.K. Wilson

The Stress Reduction Effects of Social Support

Warm and meaningful personal relationships and group activities appear to be associated with improved health patterns. This is felt by many to be a consequence of the ability of strong social support systems to offset the potentially harmful effects of life stress. Social support may improve one's self esteem or provide coping benefits by making stress seem less severe since it is not endured in solitude. Attempts to examine such hypothesis are complicated because of the difficulties in objectively quantifying social support and the necessity to distinguish between perceived availability as opposed to actual existence. One attempt to explore this was reported in a recent study of military wives. Stress was defined as the amount of time spent in the field by the soldiers in the husbands' units. Support was defined as the perception of being able to count on another military wife for help with a personal or family problem. General well being was measured by an 18-item well validated scale and the approximately 1,000 subjects in the study completed questionnaires designed to evaluate social support in terms of relationships with other military wives. Such variables as education, age, number of children, husband's rank, and amount of perceived stress were also taken into consideration. Stress was found to have an adverse effect on well being only among those who considered themselves as having little social support. Social support also appeared to be related to husband's rank and was superior in officers' wives. It also varied with the type of military unit. Wives with high levels of perceived stress seemed to have a greater tendency to develop support contact relationships. The authors concluded that stress stimulates adaptation in most individuals and that wives with healthy coping resources enlist the support of other wives during times of stress which, in turn, provides a buffering effect as assessed by improved general well being scores. It was suggested that those wives who were not capable of enlisting such support scored poorer with respect to well being not only because of stress but also due to underlying personality factors which contribute to their relative isolation.

"A cheerful interest in the activities of the day, strong motivation, and purpose in life will overcome fatigue and enable an individual to work efficiently with small amounts of sleep."

— Harrison's Principles of Internal Medicine, 3rd Edition
McGraw-Hill, N.Y. (1958)

Life Stress and Injury In Noncontact Sport Participants

One of the earliest applications of the Holmes-Rahe Scale of Life Change Events was its use in predicting the likelihood of future injury or illness among members of a football team in the forthcoming season. Individuals under stress would more likely have a tendency to become "self preoccupied," make inappropriate decisions, and otherwise behave in maladaptive fashions that predispose to injury. High life stress scores have been significantly correlated writh severity of musculoskeletal injuries in alpine skiing, basketball, biathlon, figure skating, gymnastics, and race walking. Similarly, physical education students who experienced a high level of stress were at greater risk for sustaining contusions, sprains, disc locations, and fractures than those at the lower end of the scale. It has been suggested that the relationship between stress and subsequent injury may differ in contact and noncontact sports. To examine this, 86 male and female intercollegiate varsity athletes who were participating in baseball, softball, tennis and track were studied. The Athletic Life Experiences Survey which consists of 70 items was utilized to measure total, positive, negative, and object loss life change. Time-loss from participation in practices and games was used to measure athletic injury by sport medicine personnel who were unaware of the athletes' stress scores. The results indicated that injured athletes had reported significantly more negative life changes in the past twelve months than those who were not injured. There was no significant difference between males and females, although injured female athletes reported more total life changes than those with lower scores. Life stress seemed more predictive of the frequency of athletic injury than its severity among noncontact sports participants. Perceived negative life events appeared to be the most effective predictors, although this was often influenced by the individual's sex and the particular sport. Baseball players seemed to have experienced much more life stress than softball players. The most significant correlation was noted between total life stress and the subsequent frequency of injuries for female athletes. This study supports the theory that increased life stress may predict and contribute to athletic injury. However, considerable further research is necessary to determine the mechanisms responsible for this.

"Wealth comes from excellence, and not excellence from wealth."

— Plato

More on Stress And Chest Pain

Many patients who present in the Emergency Room with chest pain, sweating, palpitations, and weakness are incorrectly diagnosed as having an impending coronary, whereas they are really experiencing an attack of panic disorder. Such symptoms may be particularly likely in patients with mitral valve prolapse, a significant percentage of whom also suffer from panic disorder. In some studies, panic disorder seems to correlate with the severity of mitral valve prolapse abnormalities. This is not surprising since increased adrenalin secretion appears to be responsible for many of the signs and symptoms of both conditions. Patients who complain of chest pain but have no evidence of any heart disease also score higher on tests for anxiety, depression, and other neurotic traits than those who have genuine angina. Furthermore, treating such patients for heart disease often tends to make the situation worse by increasing the patient's fears. Such individuals would be benefited more by reassurance and perhaps the judicious use of sedatives and tranquilizers to allay anxiety and stress.

It is estimated that perhaps one out of three patients complaining of coronary type chest pain have no evidence of structural heart disease. In one recent study, 24 patients were given various psychological tests and were also interviewed in connection with a coronary arteriography procedure to rule out coronary artery disease as the cause of their symptoms. They also received thorough medical examinations to exclude other organic causes of chest pain such as mitral valve prolapse, pleurisy, or hiatus hernia. These patients scored high on scales for neuroticism and anxiety. To exclude the possibility that their increased stress was related to the coronary arteriogram procedure itself, the same psychological tests were administered one year later at which time the findings were essentially unchanged. Despite physician reassurance to the contrary, two-thirds of the patients with normal coronary arteries continued to believe they had heart disease. Most continued to be treated as possible or potential heart patients and received cardiac medications. Of the patients with normal coronary arteries, 86% had continued to have chest distress at least once a week, 71% said their pain was unchanged or worse, and 63% were still being treated for their chest pain with antianginal drugs. The investigators concluded that "this sustained cardiologic focus of treatment can only serve to perpetuate their skepticism about their cardiac soundness."

"Worry is interest paid on trouble before it is due."

— Anonymous

Stress and Diabetic Ketoacidosis

A variety of studies have demonstrated that stress and emotions can play a significant role in the development and course of diabetes. Acute stress causes an elevation of blood sugar largely due to increased adrenalin and hydrocortisone secretion by the adrenal. Attempts to prove such relationships are often hampered because of problems associated with attempts to objectively measure or quantify stress. In addition, external events that are distressful for one individual may not be for another. The feeling of being out of control, however, appears to be uniformly distressful and apparently can contribute to diabetic complications. In one British report, 11 diabetics who had suffered from the complication of ketocidosis were compared with an equal number of matched controls. Surprisingly enough, there was no difference between the two groups with respect to insulin requirement, duration of insulin use, blood sugar and glycosylated hemoglobin concentrations, which reflect long-term blood sugar levels. However, when the patients were evaluated by means of psychological testing, those who had experienced ketoacidosis perceived themselves as less personally in control of their illness and much more susceptible to complications. The investigators postulate that this may become a self-fulfilling prophecy. Those diabetics who see themselves as more vulnerable to complications may be less likely to detect and prevent metabolic problems early on, or initiate emergency measures when they become more serious. Such patients may be at greater risk for diabetic acidosis and other complications.

"Understanding is the reward of faith. Therefore, seek not to understand that you may believe, but believe that you may understand."

— Saint Augustine

Pessimism and Poor Health

Much of the current interest in the salubrious benefits of a positive outlook and attitude stems from complementary research linking pessimism with poor health. Stress, depression and loneliness have been shown to result in a lowering of specific immune system defenses that provide resistance to a variety of infections and malignancies. However, there is comparatively scant evidence to demonstrate that "positive" emotions improve immune responses. It is possible that the benefits of such "good" stress are mediated by other mechanisms not yet fully delineated, or that they are achieved simply by negating the harmful effects of distress. Numerous anecdotal reports support the notion that mental attitude and social behavior have important health consequences.

Charles Darwin noted that people who were socially isolated or had few close human contacts were comparatively less healthy and at greater risk for dying prematurely. In addition, epidemiologic studies confirm that mortality rates are higher among those who are unmarried and that both quality and quantity of meaningful social relationships correlate with better health and longevity. An optimistic or fighting attitude can apparently improve survival and quality of life in some cancer and AIDS patients, according to numerous case reports. Warm or friendly personal contact or even physical presence has been shown to lower increased heart rate and blood pressure in intensive care unit patients as well as healthy individuals. It has been suggested that this is achieved by a reduction in stress-related hormones responsible for such elevations.

One recent study examined the results of psychological tests performed in 1946 on 100 male college graduates in their twenties. Subsequent detailed health histories for the following forty years were evaluated by scrutinizing the records of yearly physical examinations. The researchers also separated responses to a 1946 psychological questionnaire in which the men explained various misfortunes and difficulties they had experienced during World War II. "Pessimists tended to blame themselves for their setbacks, and to see the setbacks as having a long-lasting effect on their lives—rather than chalking the incident up to temporary bad luck or external causes, as their more optimistic peers did." Analysis of the health records confirmed that between the ages of 45 and 60, the pessimists had more serious illnesses of all kinds than those with an optimistic attitude. Other research of a similar retrospective nature, has also concluded that college students who demonstrated increased hostility and cynicism scores on psychological testing, were at increased risk for cardiovascular disease decades later. What is needed now are more sophisticated long-term prospective studies that can zero in on psychological and emotional factors that may predispose to specific illnesses so that mechanisms of action can be delineated.

"Never learn to do anything; if you don't learn, you'll always find someone else to do it for you."

— Mark Twain

Book Reviews • Meetings and Items of Interest

Book Review

Stress Management, The Quest for Zest, Nucho, A.O., Charles C., Thomas, Springfield, IL, 1988, 172 pp, $27.75.

This book is designed to provide an overview of current thinking about how stress affects the individual and the various approaches and techniques currently utilized to prevent and treat stress-related problems. To a considerable extent, this volume reflects the author's background in the behavioral and social sciences attempting to integrate this with a body of scientific research and pragmatic clinical practices. The underlying framework is a general systems theory approach which draws from a variety of theoretical and philosophical constructs ranging from cybernetics to yin-yang. The intricate and inseparable interrelationships of mind and body are emphasized. There is a detailed discussion of the basic components of stress-management approaches including diaphragmatic breathing, neuromuscular relaxation, self-affirmation, and purposeful imagining. Chapters on visual imagery and meditation are particularly good. Practical discussions are devoted to problems associated with job and family stress and the benefits of time management and assertiveness training. Finally, in a truly holistic approach, the role of nutrition, physical exercise, social networks and transpersonal factors are reviewed focusing on integrating these observations with older philosophical constructs. The author's style makes for easy reading although some statements (the pituitary stimulates the pineal) reflect a lack of formal medical training. There is no discussion of Type A behavior, psychoneuroimmunology or attempts to explain how the adverse effects of distress are mediated. However, this book does provide an attractive and concise introduction to the practical aspects of stress management, which was, after all, its original intention.

Human Stress: Current Selected Research Vol. 2, Humphrey, J.H. (ed.). AMS Press, New York, 1987, 246 pp., $57.50.

This is the second volume in the AMS Human Stress series consisting of thirteen chapters on various stress-related subjects. Simply reviewing the subjects covered will provide some idea of the wide range of stress-related research studies and the need for a multidisciplinary approach. They include Perceived Control, Coping Style, and Stress Arousal in a Job Setting, Research Procedures as Components of Environmental Stress, Anticipatory Responses to Exercise Occurring in Coronary-Prone (Type A) and Non-Coronary-Prone Persons, A Comparison of the Circulatory Responses to Mental Stress During Exercise in Active and Inactive Young Women, and The Effect of Maternal Stress on Fetal Birth Weight among others. Particularly valuable are the four concluding chapters which represent comprehensive reviews on Stress and Disease, Stress and Cancer, the Effects of Relaxation Training on Children. The final chapter, entitled Occupational Stress and Its Management, discusses occupation-related stresses, reviews stress management training programs, and offers a useful outline for designing an occupational stress-management program. The most comprehensive chapter is the one entitled Stress and Cancer: A Sociobiological Approach to Aging, Neuroimmunomodulation, and the Host-Tumor Relationship. It has an extremely detailed bibliography which covers the relevant literature about the cancer-prone personality, laboratory and human studies linking stress to cancer, the role of stress on immune system function, socioeconomic links between stress and cancer. More importantly, it integrates research advances in these areas in an attempt to provide an explanation for possible mechanisms of action. All of the chapters are well written and those which comprise the Review Section alone are worth the price of this volume.

Meetings and Items of Interest

Nov. 7-11, Teaching Stress Management and Relaxation Skills. Sponsored by La Crosse Exercise and Health Program and the Wisconsin Heart Institute. Inquiries: Trish L. Hutchinson, Executive Director, La Crosse Exercise and Health Program, UW-La Crosse/221 Mitchell Hall, 1725 State Street, La Crosse, WI 54601. Tel. (608) 785-8686.

Nov. 17-20, 35th Annual Meeting of the Academy of Psychosomatic Medicine, "Assuring the Future of Fiscal Survival of Consultation-Liaison Psychiatry and Psychosomatic Medicine," New Orleans, LA. (312) 784-2025.

Nov. 30-Dec. 4, First International Congress on Stress, Montreux, Switzerland. Contact American Institute of Stress, 1-800-24 RELAX; in NY (914) 963-1200.

Dec. 5-11, Hypertension in the Community, International Symposium; Tel Aviv; contact Kenes Ltd., P.O. Box 50006, Tel Aviv 61500.

Dec. 8-11, Workshops on Clinical Hypnosis, Omni San Diego Hotel, San Diego, CA, American Society of Clinical Hypnosis. Contact Thomas Wall, Ph.D. (206) 525-5700

Dec. 27-30, The Role of Exercise and Nutrition in Preventive Medicine, Beaver Run Conference Center, Breckenridge, CO, ISC Division of Wellness. Contact E. Leslie Knight, Ph.D. (813) 686-8934.

Dec. 28-31, The Role of Exercise and Nutrition in Preventive Medicine. Crested Mountain Conference Center, Crested Butte, CO, ISC Division of Wellness. Contact E. Leslie Knight, PhD. (813) 686-8934.

Jan. 8-12, 1989, Fourth International Conference on Psychological Stress and Adjustment in Time of War and Peace. Tel Aviv, Israel. Sponsored by the Society for Traumatic Stress Studies. Contact The Secretariat, P.O. B. 50006, Tel Aviv 61500, Israel. Tel. (03) 654571.

Feb. 13-16, 1989 The Role of Exercise and Nutrition in Preventive Medicine, Crested Mountain Conference Center, Crested Butte, CO, ISC Division of Wellness. Contact E. Leslie Knight, Ph.D. (813) 686-8934.

Dec. 3-7, 1989, International Round Table on Silent Myocardial Ischemia. For detailed information contact the Congress Secretariat, Tel Aviv; Contact Kenes Ltd., P.O. Box 50006, Tel Aviv 61500.

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