

The Newsletter of THE AMERICAN INSTITUTE OF STRESS

Number 10, 1988

Computerized Voice Stress Analysis?

A recent advertisement asks "How many bad decisions have you made based upon a lie?" Furthermore, "If a Person Has the Right to Lie to You, Do You Have the Right to Detect That Lie?" One new lie detector, based on computerized voice stress analysis offers to help with such problems. It "detects, measures and charts the stress in a person's voice instantaneously, with or without the person's knowledge." When a person lies, they usually experience increased stress. Conventional polygraph lie detectors utilize changes in pulse rate, breathing patterns, galvanic response and other physiologic changes to identify false statements. According to the manufacturer, lying is also accompanied by a tightening of the vocal cords and subtle subaudible changes in the voice. The Computer Voice Stress Analyzer can detect these changes. The seventeen-pound device, which comes in a five-inch briefcase, can be connected to a telephone line or used with a taped or live conversation.

"Discovery is to see what everyone has seen, but think what no one has thought."

— Albert Szent-Gyorgyi

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More on Stress, Speech and Computers

According to a U.S. Navy study, workload stress and increasing the difficulty of a task may significantly affect the characteristics of human speech. In general, when the workload increases, speech becomes more rapid and there is a rise in volume as well as pitch. That may prove to be a problem for new computer systems which enable piloting by voice-recognition. High in-flight workload, acceleration, vibration and noise are all stresses that could alter a pilot's voice. Sixty student pilots uttered the numbers zero through nine repeatedly while involved in two tasks. The first involved holding their aim on a fixed target with both a hand-held stick and a foot pedal. Very little change in speech was noted. The second, more demanding task, required the aviators to write down a series of letters and digits spoken through a headphone to one ear while ignoring those heard in the other ear. Repeating the numbers at the same time resulted in marked voice changes. These findings may have important implications for civilian as well as military voice-activated computers which may also malfunction at certain levels of operator stress.

"Observation is a passive science, experimentation an active science."

— Claude Bernard

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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The Newsletter of
**THE AMERICAN INSTITUTE OF
 STRESS**

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Mens Sana in Corpore Sano — Does a Sound Mind Lead to A Sound Body?

It seems clear that distress and negative emotions can contribute to a variety of illness syndromes. The reverse has also been increasingly proposed, namely that positive emotions or "good" stress (Selye's eustress) offset the adverse effects of distress, or actually promote wellness. Scientific support that could confirm or explain such interrelationships has come primarily from investigations of the influence of stress and emotions on immune system function, brain neurotransmitter activity and cardiovascular reactivity. The vast majority of these studies have centered on the harmful consequences of distress. Proof that emotional stability or that a stress-resistant personality enhances health is much harder to document despite a wealth of anecdotal evidence. Nevertheless, as noted in Issue 9 of the Newsletter, various long-term followup studies of college students who underwent psychological testing in their twenties, support the thesis that emotional stability, a positive optimistic attitude and effective coping mechanisms are associated with comparatively better health decades later. Much of this data is based on results obtained from the popular 550 item Minnesota Multiphasic Personality Inventory (MMPI).

A recent study attempted to explain these findings. One hundred eleven healthy college students who had undergone MMPI testing were also evaluated for "natural killer" (NK) cell activity. NK cells are important in maintaining immune defenses and also appear to be regulated, in part, by central nervous system influences. There was a weak but statistically significant correlation between high NK levels

and "healthier" MMPI profiles. This was particularly true in ratings for high ego strength. Prior research reports suggested a correlation between high ego strength and greater reactivity to a variety of challenges such as galvanic skin responses to noise or elevated heart rates while viewing emotionally disturbing movies. Others have suggested that individuals with high ego strength are able to cope better with stress because they are not burdened with cumbersome psychological defense mechanisms that have been developed to please others. The results also suggested that students who had not been able to adjust satisfactorily to the stress of college life had the lowest levels of NK cells, including those who simply scored high on depression scales.

These research findings are suggestive but need to be expanded. Obviously, measuring a single parameter of immune system function is not apt to explain why or how psychological health contributes to physical well being and many other potential contributing influences need to be tracked in exploring this complicated subject. Such investigations may some day help us to understand the definition of true health as "a sound mind in a sound body" and the intricately inseparable interrelationships between the two.

Stress and Fish

The harmful health effects of stress in humans and laboratory animals has been well documented. Many of these problems appear to result from increased secretion of adrenal hormones. Now it seems that fish may suffer from stress-related illnesses for similar reasons. Researchers in Oregon, studying young salmon raised in hatcheries, have uncovered a variety of stressful conditions that appear to contribute to the development of different diseases and even death. Crowded living conditions, netting and fin-clipping are all serious sources of salmon stress. Interestingly enough, these fish also exhibit the same physiologic reactions, and release large amounts of hydrocortisone, the major stress hormone response of the adrenal cortex. Just as in humans and animals, it is postulated that increased hydrocortisone levels suppress the immune system, thus making the fish more vulnerable to various disease.

"Water is a good drink provided it's mixed with good spirit."

— Anonymous



Stress Reduction Effects Of Muzak

As the British playwright William Congreve noted two centuries ago, "Music has charms to soothe a savage breast." The stress reduction effects of music have been utilized in various cultures and referred to by many poets. Alfred Tennyson described the serenity of the land of the Lotus Eaters by writing:

"There is sweet music here that softer falls
Than petals from blown roses on the grass.
Or night-dews on still waters between walls
Of shadowy granite, in a gleaming pass;
Music that gentler on the spirit lies,
Than tir'd eyelids upon tir'd eyes;
Music that brings sweet sleep down from
the blissful skies."

The Muzak Corporation has long been interested in the psychological effects of its musical programs. As a consequence, selections are carefully crafted to provide variations in rhythm, tempo, volume, instrumentation, order of sequence and character to achieve maximal effects at the site of delivery. Programs have been constructed to subtly enhance one's mood and attitude while in a shopping mall, bank or funeral parlor. They can also be utilized to stimulate office workers at appropriate hours to improve productivity or at other times to reduce fatigue by coinciding with the timing of observed natural highs and lows during the workday. The latest addition to the forty musical formats currently available has been designed to reduce the stress of patients in medical and dental offices. Entitled "Natural Sounds," the four-hour program was derived from thirty-five hours of very high quality tape recordings obtained from a location deep in the forest. The listener is treated to the sounds of different birds chirping or warbling, babbling brooks, rustling leaves and even deer scuffling about. Perhaps the biggest potential, says a company spokesman, "is for office atriums, floral shops and outfitter stores." So, if you close your eyes on your next ride in some skyscraper elevator, don't be surprised if you are suddenly transported back to nature.

"It is remarkable that one characteristic which seems to separate man from the allegedly lower animals, is a recurring desire to escape from reality."

— C.H.W. Horne and J.A.W. McCluskie

Stress Reduction Training Improves Diabetic Control

According to one authority, "Diabetes is perhaps the best example we have of a disease in which the patient's behavior is the key to the outcome." This is true both for juvenile or adult onset (Type II) diabetes. Since emotional stress can have a profound effect on blood sugar levels, as noted in previous issues of the Newsletter, it would seem that stress reduction techniques might provide decided benefits in some patients. To examine this, a group of Type II diabetics who had been admitted to the hospital because of poor control received the usual dietary and medication prescriptions but were also taught a stress reducing progressive muscular relaxation technique. After learning and following the training exercises, they were found to tolerate a dosage of sugar much better than matched controls who received only medication and diet instruction, but no relaxation training.

Type I, or juvenile diabetics, are more difficult to treat and blood sugar levels are much more erratic and unpredictable despite attempts to standardize diet, activity and insulin dosages. However, in one study, Type I diabetics, stabilized over a two-month period of constant surveillance, were also taught relaxation training using biofeedback equipment which monitored muscle tension, skin temperature and galvanic skin response. Over the following year, patients utilized these feedback techniques whenever they felt under stress. They kept diaries to record the degree and duration of perceived stress, results of blood sugar levels tested six times daily, and insulin requirements. They were also examined periodically by both a psychiatrist and diabetic specialist. "With the ability to relax, the patients were able to dampen their blood glucose swings under stress" although insulin requirements did not change significantly.

Other research has shown that hostile, competitive (Type A) diabetics are most likely to show an increase in blood sugar during stressful situations whereas some laid back patients actually show a drop. In one "very hard-driving Wall Street executive type," insulin requirement almost tripled as the April 15 tax deadline approached.

"Work and love — these are the basics. Without them there is neurosis."

— Theodore Reik

A New Mechanism to Explain The Stress-Cancer Link?

Advances in psychoneuroimmunology have provided insight into possible mechanisms that could explain how certain forms of stress, such as loss of a loved one, or loneliness, might predispose to cancer. Such a sequence of events is suggested by numerous anecdotal reports as well as a variety of epidemiologic studies. Bereavement and social isolation have been shown to result in depression of immune activities that can play an important role in protecting against malignant growth. Most of this research has focused on T cell mitogenic activity, natural killer cell levels, or changes in the ratio of helper and suppressor cells. It seems clear that there are strong communication links between the immune system and the brain. Receptor sites for small brain peptides, such as the endorphins, have been identified in the cell walls of lymphocytes involved in immune defenses, and increased immune system activity is associated with evidence of correspondingly increased firing of neurons in certain key locations in the brain. Some byproducts of the immune reaction to bacterial infection act directly on locations in the brain high in receptor sites for endorphin and opioid activity. Stress may exert powerful influences on the secretion and activity of endorphins, dopamine, serotonin and other neurotransmitters that have important effects on mood, emotions and behavior. It has been postulated that these chemical messengers which arise in the brain and central nervous system structures may play a role in regulating malignant growth. It is also possible that they may mediate the beneficial effects reported in some cancer patients who are cured by faith healers or visitations to shrines.

Support for this comes from researchers in India, who have now demonstrated that administration of dopamine markedly inhibits the growth of experimental tumors in mice. Tumors decreased by 50% following the injection of this neurotransmitter and the life span of the treated mice was increased by about 40%. Administration of dopamine at earlier stages of tumor growth proved proportionately more successful in achieving beneficial results. The investigators believe that dopamine may interfere with the synthesis of DNA in tumor cells leading to a destruction of the cell wall and increased susceptibility to normal phagocytic activity. These observations are intriguing. Lowered dopamine levels have been correlated with depression and cancer seems to occur more often in individuals who have been depressed. Conversely, high levels of dopamine appear to be associated with curiosity and novelty seeking. Such attitudes and activities have been reported to be linked to improved immune system responses. Of additional interest is the notation that psychotherapeutic interventions in cancer patients often utilize approaches that emphasize the development of novelty and creativity.

Big Boys Don't Cry — Except at Work

According to the recently published book, *Working Up a Storm*, a study of 550 people reveals that fifty per cent of men interviewed, admitted having cried at work. Almost half of these said it was because they were "emotionally moved," a third because they were just "worn down," and twenty per cent because they were angry.

According to the authors, there is a growing new acceptance of a valued employee's right to shed tears. "Not only is there more open crying in offices than a decade ago, but it used to be that if someone cried it was a young secretary. Now it's a junior partner, an executive, even your boss . . . Everyone we interviewed seemed to think he/she was the only one who cried at work . . . It's liberating to see that you're not the only one and that except in very unusual circumstances, it's not the end of the world professionally." Eighty per cent of the women in the survey had cried at work, the major reason being anger. A suggested explanation was that girls are taught it's not acceptable to express anger directly as opposed to boys. Women under fifty felt better about crying than "older, more male-imitating females." The general conclusion seems to be that weeping in the office has become more acceptable as a way of relieving stress, and is no longer regarded as simply a sign of weakness.

"Nothing is more annoying than a low man raised to a high position."

— Claudian

Noise Stress Affects Sense of Taste

Loud noises were one of the earliest stressors employed by Hans Selye in laboratory experiments which led to the development of his concept of Stress. In humans, noise stress has been associated with an increased incidence of hypertension, heart attacks, sudden death, personality problems, hearing loss, certain malignancies and a host of other problems. It has also been demonstrated that stressful sound levels cause an increase in adrenal hormone secretion and other endocrine changes. Now, French researchers have reported that after exposure to noise stress, sweet foods taste sweeter. In addition, there appears to be an increased desire for sweets, supporting the tendency for increased chocolate consumption seen in some individuals when they are tense or anxious. The mechanism underlying this is not clear. It has been shown that stress mobilizes appetite-stimulating endorphins and dopamine. And from a teleologic viewpoint, increased sweet consumption would raise blood sugar levels to provide more energy under stressful situations.

Which City Has the Least Stress — Or the Most?

Where's the least stressful place to live? According to one recently released survey, that honor goes to State College, Pa. Nestled in an area appropriately named "Happy Valley," residents are generally well educated, financially secure and there is little threat of a population explosion that would disturb the present "idyllic" environment. As one resident noted: "If you feel stress, you're just a little walk or a short bike ride from some very beautiful countryside." Reno, Nevada, had the dubious distinction of being the city with the most stress. The report suggested that "The social norms of such casino-dominated cultures—which encourage risk-taking and escape from reality, while handing out free drinks—undoubtedly foster pathology in both visitors and residents." This study of 265 cities was based on reported rates of crime, suicide, divorce and alcoholism using the assumption that such factors would result in stressful responses. However, only a few weeks later, the results of another lengthy survey using different criteria were made public, and Cedar Rapids, Iowa, was judged to be the best place to live in America. The Zero Population Growth group compared cities by using its "urban stress test" which assesses population change and density, crime rates, support for education, economics, air quality, hazardous wastes, water, sewage and other environmental factors. The penalty ranged from one to five points for each of these (fewer is better) and totals are averaged for an overall score. The higher the rating, the more stress. Cedar Rapids with 1.6 edged out Madison, Wis., which had a 1.7 rating and Ann Arbor, Mich., and Lincoln, Neb., each of which were 1.8. Gary, Ind., had the worst rating at 4.2, followed closely by Baltimore. Chicago, Houston, Jersey City, N.J., and Pomona, Cal., with 4.1. Among large cities with a population over 500,000, Columbus, Ohio, fared best at 2.6. In contrast, Los Angeles and St. Louis were 3.9. It's interesting, but confusing, to note that none of the cities mentioned above with the best grades were on the list of the top 25 places to live published in the first survey. Similarly, none of the very high-stress communities could be found among the 25 worst in the prior report. These kinds of rating scales can have surprising financial ramifications in terms of real estate values, tourism and they can also lead to litigation. When "clerical errors" led to an undeserved low rating for Tulsa, the Oklahoma city responded with a \$26 million law suit for defaming its reputation. There appears to be some suggestion that the lower-stress attractiveness of Western and

Southern cities, because of their slower pace and better climate, tends to attract high-stressed individuals who eventually contribute to the creation of a quite different milieu. Alcoholism, suicide, divorce and crime rates were correlated with 1980 census data showing the percentage of people in each city who had moved from another state. High migration rates in Sunbelt areas seemed to be associated with a correspondingly high subsequent incidence of these psychosocial problems.

The 25 Lowest Stress Cities

Overall Rank	Metropolitan Area	Lowest in Alcoholism	Least Crime	Fewest Suicides	Least Divorce
1	State College, PA	1	33	8	20
2	Grand Forks, ND	38	9	1	52
3	St. Cloud, MN	44	3	16	15
4	Rochester, MN	6	17	19	66
5	McAllen/Pharr/Edinburg, TX	48	102	6	11
6	Altoona, PA	73	7	77	3
7	Bloomington, IN	4	61	3	182
8	Provo/Orem, UT	8	24	40	30
9	Utica, NY	29	8	26	34
10	Akron, OH	11	114	53	7
11	Sheboygan, WI	10	20	61	37
12	Lancaster, PA	10	10	73	36
13	Paterson/Clifton/Passaic, NJ	32	105	48	2
14	Bismarck, ND	5	12	179	32
15	Allentown/Bethlehem/Easton, PA	69	29	134	4
16	Lafayette/West Lafayette, IN	25	22	5	169
17	Nassau/Suffolk, NY	34	38	47	23
18	Poughkeepsie, NY	40	53	30	38
19	Albany/Schenectady/Troy, NY	58	19	170	5
20	Lawrence, KS	2	167	14	161
21	New Bedford/Fall River, MA	55	163	4	26
22	Bloomington/Normal, IL	17	64	20	108
23	Wheeling, WV	85	1	51	76
24	Cumberland, MD	65	2	69	72
25	Wausau, WI	58	19	94	29

Job Stress and Breast Cancer

The latest government statistics have shown a puzzling increase in the incidence of breast cancer in middle-age females, despite a declining rate in other groups. Experts have no explanation for this trend, although there has been increased interest in the relationship between stress and breast cancer, as evidenced by a new book with this title, reviewed a few issues ago. It is known that the earlier a woman has her first child, the less likely she is to develop breast cancer. Even pregnancy itself confers some benefits. As more and more career-oriented women enter the work force, they tend to marry and have children later in life, or never become pregnant at all. Pregnancy lowers the levels of prolactin, a pituitary hormone that causes breast tissue growth and promotes breast cancer in experimental animals. It has also been established that stress can cause a depression of immune system components responsible for resistance to malignant growth.

Many working women are subjected to increased stress because they have to juggle work responsibilities with being a wife, mother, single parent or custodial care of an aging parent. Most find that despite equal or superior training, experience or ability, they are paid less than their male counterparts and are not as likely to advance up the corporate ladder, especially at upper echelons. Often they are subjected to subtle as well as overt sexual harassment and, in general, have to "act like a lady, think like a man and work like a dog" to get ahead. Some experts believe that this combination of factors may be contributing to the curious rise in breast cancer rates in middle-aged women and it would be of interest to learn whether further investigations confirm that working women are at particular risk.

"The longer I live the more keenly I feel that whatever was good enough for our fathers is not good enough for us."

— Orson Welles

Job Stress and Cancer of the Ovary?

A recent medical journal report reveals that "Career women, especially those with no children, may fit the highest-risk profile for deadly ovarian cancer." The stress of life in the fast lane may also be a factor

since city life and a diet high in saturated fats also seemed to play a role, although this may possibly be related to unknown carcinogens. "The high-risk prototype that has emerged is a well-educated, affluent white woman living in an urban area who has only a single child," according to the author, a gynecologist at New York's Montefiore Medical Center. Single career women had fourteen times the average risk and Jewish women twice as much. Blacks had a third fewer ovarian cancers than whites in this survey. Ovarian tumors notoriously may go unnoticed so that "careful and regular monitoring is crucial for women at high risk." A strong family history is important, leading to the suggestion that women over forty with a mother or sister having ovarian cancer should have a pelvic exam as often as every three months and a sonogram twice a year. All women at risk should have pelvic exams twice a year and regular pap smears. At present, ovarian cancer strikes 19,000 women a year and kills 12,000. However, if detected early, 85% will survive five years or longer.

"The believer is happy; the doubter is wise."

— Hungarian proverb

The Surprising Stress Reduction Effects of The Beach

A century or so ago physicians regularly prescribed a stay at the seaside as part of the recuperative process for a variety of illnesses. The beach appeared to have a particularly calming effect on patients with anxiety, depression and other stress-related emotional problems. Possibly the sight and rhythmic sounds of the repetitive rolling waves, or the fresh breezes had something to do with the salubrious results observed. One of the most popular and effective techniques currently utilized in commercial devices to promote sleep is the reproduction of the sounds of waves and their reverberations as they reach the shore. We have previously reported on the stress reduction effects of aroma therapy. Are some of the benefits of the beach produced by its associated smell of fresh breezes and other unique scents? Support for this comes from the research of two English psychologists who studied eight patients suffering from moderately severe forms of chronic anxiety. Their laboratory room was made into a "mock beach" using lighting and audiovisual techniques to recreate the feeling of the seaside. Polygraph measurements of tension in

(continued on next page)

The Surprising Stress Reduction Effects of The Beach *(continued from page 6)*

frontal forehead muscles were continually recorded. Increased tension of these muscles are frequently a manifestation of stress and can cause tension and stress-related headaches. In all patients, measurable relaxation was noted during the laboratory seaside experience. However, when a chemical "beach perfume" composed of "ozone and essences of such familiar beach smells as seaweed and decaying clams" was introduced, "the degree of relaxation in the patients increased by as much as an additional 17%!

The part of the brain that processes smell is located in the primitive limbic system that is also involved in the regulation of emotion and moods. Seaside aromatherapy alone was tried in some patients suffering from chronic stress who "were so anxious that they hadn't left their houses for months or even years. Now they're coming out and being much more socially active" report the researchers.

"A cynic is not merely one who reads bitter lessons from the past, he is one who is prematurely disappointed in the future."

— Sidney Harris

More on Cardiovascular Circadian Rhythms

Prior issues of the Newsletter have reported on the marked differences which have been consistently observed in the incidence of various cardiovascular problems over consecutive 24-hour periods. These predictable fluctuations appear to correspond with certain circadian rhythms. While potentially harmful abnormalities are readily detectable by sophisticated monitoring techniques, patients remain unaware of their existence since they usually produce no signs or symptoms. Nevertheless, they are extremely important clinically and have important implications for the optimal timing of appropriate therapy. A circadian pattern of ischemia has been documented, with a peak during the early morning hours that corresponds to a similar pattern of increased heart rate, blood levels of catecholamines as well as platelet stickiness, decreased fibrinolytic activity and other incidences of quickened blood clotting. It is no coincidence that an almost identical pattern of

variation has been reported for sudden death and acute heart attacks, suggesting that the underlying mechanism is the same. This is supported by the observation that beta blocker drugs, which blunt the effects of stress-related catecholamines, also reduce the incidence of heart attacks and angina and at the same time interrupt normal circadian fluctuations. On the other hand, calcium channel blockers which are often prescribed for similar clinical cardiovascular complaints did not alter customary circadian variation patterns in heart rate and catecholamine production. In general, beta blockers decrease the heart's requirement for oxygen, while calcium antagonists produce benefits by increasing the supply of oxygen to the heart.

A recently reported study of 150 patients with angiographically confirmed coronary artery disease off of medication were monitored with the results confirming prior reports of a circadian variation in ischemia with a peak during early morning waking hours when the heart's demand for oxygen suddenly increases. In this report, patients treated with a beta blocker showed much less evidence of myocardial ischemia on ECG monitoring and heart rate and circadian variation was not evident. Administration of a calcium channel antagonist in comparable therapeutic doses did not produce such benefits or alter the normal circadian pattern, despite definite benefits in reducing clinical angina, suggesting that alterations in vasomotor tone may not be the primary mechanism involved in modulating the circadian pattern of the various parameters noted above. These observations have important implications for the clinical use of specific medications both with respect to dosage and timing of administration in order to achieve the best results.

"Moral indignation is jealousy with a halo."

— H.G. Wells

"Controlling Stress in Children,"

a book reviewed on page 8 of this Newsletter, is particularly appropriate now that the school year is in full swing. Two-to-twelve-year-old youngsters are the subjects of discussion. Strategies are presented, especially basic techniques for teachers and others involved in dealing with childhood stress.

Book Reviews • Meetings and Items of Interest

Book Reviews

Neural Modulation of Immunity, Guillemin, R., Cohn, M., and Melnechuk, T. (eds.). Raven Press, 1985, 272 pp., \$54.50.

The sixteen chapters in this volume represent updated versions of presentations made at an international conference in Belgium several years ago. It is unusually comprehensive and quite up-to-date in dealing with almost every aspect of relationships between the central nervous system and immune function. The authors have been selected carefully and represent the leading experts in their particular fields. The Introductory Chapter provides an excellent overview of parameters of immune system function and traces their complex interrelationships. Subsequent chapters are devoted to the effect of psychological factors, emotions, and stress on immune system function. Others deal with anatomic and chemical relationships including the Effect of Neurolesions on Cellular Immunity, The Role of Enkephalins, Endorphins, and Substance P, and The Neuroanatomy of Lymphoid Tissue. Methodologic Problems in Measurement Techniques, and Immunological-Neuroendocrine Feedback Loops are the titles of the chapters which explore these subjects in detail. In some respects, it would appear that the immune system response to stress often mimics Selye's General Adaptation Syndrome. Thus resistance to a specific stressor can be produced experimentally with resultant increased immune defenses under certain circumstances. The necessity for a multidisciplinary approach to this complicated subject is obvious from the valuable discussion following each chapter and this volume appears to have covered all the bases in this regard. More importantly, it points the direction that future research must take in unravelling these complex interrelationships. This book is highly recommended to anyone with an interest in immunology, neuroendocrinology, and especially the effect of stress on these important modulators of homeostasis.

Controlling Stress in Children, Humphrey, J.H. and Humphrey, J.N. (eds.). Charles C. Thomas, Springfield, 1988, 189 pp., \$21.50.

This father-daughter team has collaborated on several books about stress, particularly as it affects children and adolescents. The present volume is designed to assist adults who deal with children to better appreciate the signs and symptoms of stress in childhood and strategies that can be utilized in dealing with the problem. The focus in this volume is on youngsters between the ages of 2-12, since these are formative years in which the benefits of stress management training could be

expected to produce maximal benefits. The unique nature of childhood stress is reviewed and the discussion covers physical stress, psychological stress, the role of personality and sex differences, as well as their health consequences. Of particular interest is the section dealing with the nature and effects of the stress imposed by our current educational system. Teacher behaviors, test anxiety, and subject anxiety in the school learning environment often foster a stressful competitive, aggressive attitude. Various approaches to the problem are described including a variety of relaxation and meditative techniques, as well as the use of creative strategies to diminish the stressful effects of fear and other potentially harmful emotions. Specific practices and outlines are presented in detail and provide a useful resource for teachers and others who may be involved in dealing with the problems of stress in childhood. Unfortunately, there was only a brief mention of the role of Type A behavior which many experts feel may have its origins in early childhood and where stress reduction efforts could be most productively applied.

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, Ph.D. (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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