

The Psychiatric Response of Personality and Immunity to Cancer

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The pressing need now is for more research to further differentiate and clarify the relationships between life events, emotional reactions, and ego-defenses and those physiologic processes that mediate between our life experiences and the relevant variables in clinical cancer. Dr. Claus Bahne Bahnson, 1981.

Man is made by his belief, as he believes, so he is. Bhagavad-Gita.

If we can discover how to activate the immune system we may have a successful way to fight cancer. Drs. Krahenbuhl and Remington.

A. B. Miller, National Cancer Institute of Canada, Epidemiology Unit, University of Toronto, Ontario presented a paper at the American Health Foundation, Deutsche Krebshefte Conference on the **Primary Prevention of Cancer: Assessment of Risk Factors and Future Directions**, New York, New York, June 7-8, 1979. This paper summarizes the accumulating evidence from a number of different types of studies showing that nutrition is related to cancer in several sites and attempts an estimation of the

contribution of nutrition to cancer etiology. He states: "In conclusion, there would seem to be sufficient evidence to propose modifying the diet of Western countries to reduce total fat and increase dietary fiber on the lines of the prudent diet, and to introduce certain protective factors, such as an increase in green vegetables and vitamin C."

Drs. Lloyd H. Schloen, Gabriel Fernandes, John A. Garofalo and Robert A. Good, Memorial Sloan-Kettering Cancer Center, in their informative paper, **Nutrition, Immunity and Cancer: A Review Part II: Zinc, Immune Function and Cancer** (1979) suggest that: "In discussion of the role of trace metals in physiologic and pathologic processes, the fact that the relationship between these elements and living systems have a long and intimate history is frequently overlooked. Indeed it has been suggested by some (McClen-don, 1976) that life evolved because of the unique electrochemical properties of metals in specific reducing or oxidizing environments. In terms of human disease, therefore, we must proceed from a position of deepest respect for these pre-existing relationships and with caution as we assess trace metal involvement in pathologic process.

As early as 1887 Ephraim Cutter, in his paper **Diet on Cancer** (1887) observed that

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"mental depression is too often an element in cancerous cases to be overlooked." Amussat (1854) in France and Paget (1870) in England made similar observations. Several researchers whose work has been considered more recently (Kowal, 1955) expressed essentially similar ideas in the 18th and 19th centuries; among their patients it appears that the most frequently observed precursors were: "(1) loss of significant figure (as a parent, child, spouse, etc.) through death or separation; (2) frustration of significant life situations and goals; and (3) a tendency toward despair, hopelessness, and grief when encountering stress, frustration, and/or loss."

Dr. Claus Bahnson (1981) notes that the evidence for a possible relationship between maturational experiences and the later development of cancer suggests a subtle and unstable link between cancer and early experiences of depletion and loss, reawakened by losses and depression later in life. "Although the coping and ego defense style of a person always is anchored in the past, particularly in family experiences, it is clear from personality studies of cancer patients that as adults they show striking characteristics in ego defense mechanisms."

Kissen and his associates in Glasgow (1962, 1964, 1966, 1969) pursued the particular approach emphasizing long-term psychodynamic aspects of personality. Kissen's group found that lung cancer patients had marked difficulty with emotional discharge and tended to be inhibited and repressive.

Blumberg and associates (1954) described cancer patients as defensive, anxious, overly controlled persons with no ability to release tension through motor discharge, verbal discharge, or any kind of acting out. It seemed to Blumberg and his associates that human cancer could represent a "non-adaptation syndrome." Cobb (1952) stressed that all cancer patients regard emotional involvement as dangerous. West (1954) described the cancer patient with the poorest prognosis as a defensive, repressive person, with a need for appearing "good" and acceptable to others. An interesting observation made by Bacon (1952) was the detection of increased guilt feeling in half of her 40 breast

cancer patients during the year preceding the discovery of the breast lump. This dynamic was often expressed by the patient as chronic or acute depression that was accompanied by vague feelings of anxiety, self-criticism and self-condemnation. The studies of Bahnson (1964) and his colleagues (1979) support the hypothesis that cancer patients rely heavily on denial and repression. Bahnson found that cancer patients, unlike persons in three control groups, remembered their parents as noninvolved, cold and not participatory in their early emotional lives. They concluded that the rigid defensiveness and lack of self-communication in cancer patients may be related to early family patterns.

Katz and his associates (1969) found that in women with breast cancer, the effectiveness of the ego-defensive processes against depression and anxiety were predictive of hydrocortisone production. That is, women with a breakdown in the ego-defense system had higher hydrocortisone outputs as well as a poorer general prognosis than women with a more flexible and effective style of coping. Possibly this increased production of hydrocortisone may have inhibited immunologic reactions, therefore, the poor prognosis.

Greer and Morris (1975) found a significant association between poor prognosis for breast cancer and behavior pattern, persisting throughout life, of "abnormal release of emotions." After a study of terminal cancer patients, Cutler (1954) described them as individuals who fail to express themselves and who repress hostility. Brown and associates (1961), Goldfarb and associates (1967) and Abse and associates (1972, 1974) have also commented on the repressive personality of the cancer patient. Thus, Bahnson suggests, "it is not loss and depression alone that usher in clinical onset of cancer, but the combination of depleting life events with a particular ego-defensive and coping style."

Psychosomatic mechanisms may lead to the onset of cancer via the neurologic apparatus between the tissues and the central process, by way of immunologic pathways that also may be influenced by endocrine changes, through endocrinologic connecting links. Funkenstein and associates (1957)

showed that "anger-in" is associated with increased adrenaline production. Later Curtis and associates (1960, 1966) showed that noradrenaline and adrenaline are found in different proportions in depression—depressed persons with anxiety operate on a higher level of adrenaline versus noradrenaline.

It is possible to understand how nervous system responses to environmental or intrapsychic perceptions may activate several endocrine processes which in turn influence the continuously active immune system, when we conceive of the neurologic, endocrine and immune system as an integrated whole. "Direct messages from the hypothalamus to the target cells also are dispersed, and these in concert with small secondary shifts in endocrine balance also may affect the complex immune system" (Bahnson, 1981).

Dr. Harper (1978) carefully outlines the body's "intrinsic" primary defenses against cancer as being a healthy immune system and pancreatic sufficiency. According to Amkraut (1975) and Solomon (1979) we can conceptualize the immune system in three phases: an afferent phase, a central phase and an efferent phase, all influenced by different hormones. For example, looking at the efferent immune process, a modest increase in steroid production stimulates macrophage activity, whereas substantial increases in steroid production seem to inhibit the activities of the macrophages (Bilbey, 1960). When the macrophages fail, tumor growth often extends and cannot be controlled by other sections of the immune system. Lymphocytes are important in tumor defense, yet lymphocyte function may be influenced by the blood levels of insulin, histamine, steroids and alpha—and beta-adrenergic hormones. Thyroid hormones also affect the immune system. The thymus is so closely related to the pituitary gland that damage to one necessarily leads to changes in the other (Pierpaoli and Sorkin, 1973). Rossio and Goldstein (1977) in their paper **Immunotherapy of Cancer with Thymosin** comment that "in the past 15 years, experimental and clinical investigations have led to the recognition of the thymus gland as the master gland of immunity. Through the secretion of a family of polypeptide

hormones termed thymosin the thymus gland controls the development and function of the immune system. These polypeptides act on thymic-dependent lymphocytes (T-cells), such as "killer cells" which are crucial to normal immune function and are required for the initiation and maintenance of most antibody responses. Thymosin can also increase T-cell numbers and function in cancer patients."

Prostaglandin (PG) E1 plays a major role in the regulation of thymus development and function. T lymphocyte abnormalities have been described in many diseases including abnormal susceptibility to infections, cancer, auto-immune disorders, arthritis, multiple sclerosis and certain types of collagen diseases (Horrobin et al., 1979).

Recent evidence strongly suggests that prostaglandin E1 is dependent on nutritional factors—linoleic acid, gamma-linoleic acid, pyridoxine, zinc and ascorbic acid are key nutrients. Inadequate intake of any one of these will lead to inadequate prostaglandin E1 formation and defective T lymphocyte function. Megadoses of any of these nutrients will be only minimally effective in the absence of any one of the other of these nutrients. Horrobin and his associates concluded that "by careful attention to the diet it should be possible to activate T lymphocyte function." They also noted that many cancer cells and virally-infected cells are unable to make prostaglandin E1 because they cannot convert linoleic acid to gamma-linoleic acid. They suggest that the direct provision of gamma-linoleic acid or dihomogammalineic acid is worthy of investigation.

Drs. Schloen, Fernandes, Garofalo and Good assure us that "Clearly, zinc deficiency exerts a profound and apparently specific effect upon the thymus, thymocytes and cellular immune function which can be reversed by zinc repletion" (1979). They note that the direct relationship between dietary zinc and immuno-deficiencies raises the question "whether lack of zinc has anything to do with the pathogenesis of congenital, not to mention acquired, immunodeficiencies, and if the immune deficits so frequently observed in cancer are produced by poor dietary intake, re-compartmentalization and, eventually, loss of zinc." However, they argue that

"our observations and those of others of improved cellular immunity function and increased thymus hormone levels following zinc repletion in some patients, might argue for zinc supplementation where depressed serum zinc levels and immune parameters are present." The close, and perhaps diametrically opposite, physiologic and biochemical relationships between zinc and iron, between zinc and copper, as well as the involvement and interaction of selenium, cadmium and other trace elements, indicate that we have a long way *to go* in the study of metals, immune function and cancer (Schloen, Fernandes, Garofalo and Good, 1979).

Interferon was discovered in 1957 by Isaacs and Lindenman as a result of study of the phenomenon of virus interference. Interferon is a hormone-type glycoprotein, a substance normally synthesized by mammalian and other cells. This substance can be stimulated by viruses and other "interferon inducers." "Interferon appears to be another high potency, non-toxic orthomolecular substance produced and mobilized by the body to maintain homeostatis against viral disease stress, just like ascorbate" (Stone, 1980).

A number of interferons have been identified. Their basic actions are on cell membranes where they inhibit the translation of m-RNA. Interferons are generally species-specific; however, the antiviral action is not virus specific and most human viral pathogens are susceptible to circulating interferons. Interferons have other effects when cell growth and multiplication are inhibited—there are actions concerned with immune processes with enhancement of the expression of cell-surface antigens and of the activity of natural killer cells; under some circumstances T-cell activity is increased (Hirsch and Swartz, 1980).

The Biology of Interferons was the subject of a major conference at Rotterdam, April 21-24, 1981, when the present state of the art of this rapidly moving field was surveyed (Newmark, 1981). The consensus of the conference was that interferons will find a place in the prevention and treatment of viral diseases and in the treatment of cancer. The anticancer action is unique in that it functions through the immune system and

particularly by way of the natural killer cells.

In his paper, **The Possible Role of Mega-ascorbate in the Endogenous Synthesis of Interferon** (1980), Dr. Irwin Stone notes that interferon is widely known as the most potent endogenous antiviral agent; and the use of megadose ascorbate in humans gives clinically successful responses that are almost identical with those obtained from interferon. He suggests that part of the success obtain¹-ed with ascorbate may be due to its action as an "interferon inducer" and stimulating the body's synthesis of interferon. Dr. Stone proposes that megadoses of ascorbate be given to stimulate the endogenous synthesis of interferon in combating disease.

Horrobin and associates (1979) note that many cancer cells and virally transformed cells are severely deficient in prostaglandin E₁ (PGE₁). The genetic marker for many of these cell lines is the loss of the ability to convert linoleic acid to gammalinoleic acid (GLA) which is a precursor of PGE₁. Recently it has been discovered that vitamin C enhances the conversion of dihomogammalinoleic acid (DGLA) to prostaglandin E₁ in human platelets. It is suggested that this mechanism can account for many of the known actions of ascorbic acid and the therapeutic result occurs only if adequate amounts of DGLA are available.

Horrobin and associates support a remarkable parallel between the effects of PGE₁ deficiency and those of ascorbic acid deficiency, and they propose that the consequence of ascorbic deficiency and the desirable effects of high vitamin C intake are mediated through PGE₁. The desirable effects of vitamin C will take place only if adequate amounts of DGLA are available. The nutritional factors which determine DGLA availability are zinc, pyridoxine and the essential fatty acids.

Drs. Linus Pauling and Ewan Cameron in their book **Cancer and Vitamin C** (1979), point out that vitamin C has significant effectiveness in preventing cancer and has value, together with most of the conventional therapeutic methods, in treating the disease at every stage. They note the average increase in survival time of patients with

advanced gastrointestinal cancer treated with 10 grams of vitamin C per day is greater than that reported for those treated with chemotherapy. They suggest that this nutritional treatment of cancer, with emphasis on vitamin C, is also probably far more effective at earlier stages of cancer than in the terminal stage, and if it is instituted at the first sign of cancer it may well decrease the cancer mortality by much more than their earlier estimate of 10 percent. "With the possible exception of during intense chemotherapy, we strongly advocate the use of supplemental ascorbate in the management of all cancer patients from as early in the illness as possible. We believe that this simple measure would improve the overall results of cancer treatment quite dramatically, not only by making the patients more resistant to their illness but also by protecting them against some of the serious and occasionally fatal complications of the cancer treatment itself" (Cameron and Pauling, 1979).

Drs. Cameron and Pauling conclude that optimal doses of vitamin C are important in treating cancer and may be one of the most hopeful ways of preventing cancer (Hoffer, 1980). Dr. Hoffer suggests that cancer treatment include surgery, radiation if necessary as well as some chemotherapy, but with major emphasis *on* orthomolecular nutrition supplemented with vitamin C in doses ten to one hundred grams per day plus other vitamins and essential minerals. "This program may also be preventive" (Hoffer, 1981).

Stone (1972, 1978) tells us that ascorbic acid is a natural metabolite which man has lost the ability to make. Our ancestors suffered from a mutation, about 60 million years ago, which removed an enzyme essential for the conversion of glucose into ascorbic acid. Pauling (1968) notes how such a mutation, which would confer a genetic advantage in certain environments which provided ample quantities of ascorbic acid in food, would lose any advantage in an environment deficient in ascorbic acid, and suffer scurvy ranging from the predetermined type to the subclinical form present in most people. Dr. Stone's work on the genetics of scurvy has shown that humans depending solely on their diet for their daily lifetime intake of ascorbate are

victims of subclinical scurvy, the CSS syndrome. He comments that with this asymptomatic epidemic syndrome resistance to disease is low or absent, healing is impaired and the many facets of the human immune system are at a low ebb (1972). "If medicine gave up its conviction that ascorbic acid is a vitamin and needed only in small doses it would pay proper attention to the therapeutic and preventive value of ascorbic acid. It should be considered in the same class as essential amino acids, an 'essential nutrient' and required in grams rather than in milligram dosages" (Osmond and Hoffer, 1980).

Even though ascorbic acid cannot be made in the brain, its concentration is higher there than in any other organ except the adrenal glands. Osmond and Hoffer (1980) suggest that apparently it enters through the choroid plexus, and it should not be surprising that it plays a major role in brain function; because the body would not make an effort to maintain a high level in the brain when for most people the whole body contains just enough to prevent scurvy but not enough for optimum health (Stone, 1972).

What major roles does vitamin C play in brain function? We know it is one of the most powerful dopamine receptor blockers (Osmond and Hoffer, 1980); "this will surprise those who believe that ascorbic acid has no effect *on* the central nervous system." Osmond and Hoffer suggest that ascorbic acid may be a naturally occurring anti-anxiety substance; and perhaps this is why brain tissue is one of the major storage sites.

Apparently alcohol can play a beneficial role in the health and well-being of some people. Morris Chafetz, former director of the National Institute of Alcohol Abuse and Alcoholism, suggests that alcohol in moderate use protects the cardiac patient by reducing anxiety, relieving pain, and promoting relaxation. "Thus we see that an important effect of alcohol is its action on the psyche" (Oyle, 1979). I am quite certain, from my own experience and that of my patients, that an important effect of megadoses of ascorbic acid is its action on the psyche.

Dr. Oyle suggests that belief is basically a function of the psyche and that removal of the distorting lens of rigid, outworn belief

structures can reestablish the healing connection. "Beliefs, opinions, and shoulds, we have theorized, may seriously affect our health and well-being" (Oyle, 1979).

The work done by Dr. Roger Guillemin and associates at the Salk Institute in California won a Nobel Prize for isolating chemical substances from the base of the brain which transmit messages from the thinking brain to the pituitary—the master gland of the endocrine system. Evanescent thoughts, electrochemical nerve impulses, stimulate the flow of hormones, the chemical compounds which virtually affect and control the function of every cell in your body. Neurohumoral transducers are substances which connect the psychological with the physical. They receive electrical nerve impulses from the brain and transform them into chemical messages which travel through the bloodstream. The message carried by the electrical thought is precisely replicated by the chemical compound. According to Dr. Hans Selye (1976), peaceful thoughts release peaceful hormones; aggressive and fearful thoughts release aggressive and fearful hormones. "Hormones have been isolated, and nonhormone substances have been synthesized, which have either 'syntoxic' or 'catatoxic' effects." Dr. Selye dubbed syntoxic hormones as "hormones of harmonious cooperation." Dr. Selye calls them "the doves among the hormones; cortisone is one of those. They are the tissue tranquilizers." The catatoxic hormones are the hormones of aggression and of resistance. Adrenaline, which mediates the fight-or-flight reaction, is an example. Dr. Selye suggests that there are also syntoxic and catatoxic attitudes. Dr. Selye had a chance to test his own theories when he found he had cancer. "I never thought I could cure it myself." Dr. Selye adopted a syntoxic attitude toward his potentially fatal disease. "I just decided that in a year I could accomplish a lot, so why not use it?" Throwing himself into his work, he ignored the malignant process in his body. "I had a little bit of luck," he recalls. The tumor disappeared spontaneously.

Dr. Selye shared his experience with oncologists at an international symposium on stress, death and cancer co-sponsored by New York's

Sloan-Kettering Cancer Institute and his own International Institute of Stress. "Scientists at the symposium believed through the stress I placed on my immunologic system I probably played a great role in curing my own cancer." To date, Dr. Selye's Institute of Stress has collected over a hundred well-documented scientific articles concerning the curative effects of patients' attitudes in cancer cases. Dr. Selye does not at this time claim that he cured his own cancer by his attitude—but he does consider the subject not closed: "My cancer was cured, and I have that attitude," he says with a grin (Oyle, 1979).

In a report entitled **Immunotherapy and Cancer** by Dr. J. L. Krahenbuhl of the highly respected Palo Alto Medical Research Foundation and Dr. J. S. Remington, professor of medicine, Stanford Medical School, was a dramatic announcement—"If we can discover how to activate the immune system we may have a successful way to fight cancer" (1978). "Currently," says Drs. Krahenbuhl and Remington, "we have three weapons against cancer: surgery, radiation, and chemotherapy. All three are radical treatments with fundamental shortcomings . . . For years scientists have searched for a way to direct the cancer patient's own defenses against the disease. Many believe that this rediscovered form of cancer treatment represents a fourth major weapon in fighting cancer." Dr. Irving Oyle (1979) comments that "the 'fourth major weapon' is something within the patient—within you. It is known to science as the 'immune defense system'—your body's natural ability to repel invasion." The "immunosurveillance theory" holds that we make cancer cells constantly, but that they are systematically apprehended and eliminated by the immune system. Why does this system sometimes break down? Why do the defender cells allow cancer to run rampant and unchecked through the body? What keeps us from activating our efficient immune system to deal with particular diseases?

Dr. Hans Selye has won worldwide acclaim and recognition for his fundamental contributions to our understanding of the way in which mental strain can change the body.

That the intellect can initiate real physical disease is a revolutionary idea. Now, if we can only know and understand the major roles vitamin C plays in brain function! We know that one of the most powerful dopamine receptor blockers is ascorbic acid. Osmond and Hoffer (1980) tell us that the amines such as adrenaline, noradrenaline and dopamine are highly reactive molecules which are readily oxidized to their respective indole derivatives: adrenochrome, "norad-renochrome and dopachrome. Adrenochrome is an endogenous hallucinogen which may play a role in the cause of schizophrenia (Hoffer and Osmond, 1967). If ascorbic acid proves "to be a naturally occurring antianxiety substance" (Osmond and Hoffer, 1980), it may prove—in megadoses—to activate the immune system. As Dr. Irwin Stone says, "Megascorbics will be the main future means of cancer prevention and megascor-bic therapy will be routine in future cancer therapy" (1980).

The real voyage of discovery consists not in seeking new lands, but in seeing with new eyes.
Marcel Proust.

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Stress Management

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The Southeast Biosocial Institute has incorporated a stress-management program the past four months which is proving increasingly effective in mitigating student (patient) stress. The program is particularly geared toward combating the psychological/emotional constituents of stress, although no mind/body dichotomy is really implied. In fact, the actual basis of the stress-management program is sound nutrition and biochemical stabilization (homeostasis). Hence, optimal physical homeostasis is the *sine qua non* of the program. (Certainly, relaxation is all but impossible for someone with an unstable blood sugar condition.)

Specifically, the program entails a multimodality approach combining breathing (meditation), physical stretching postures (hatha yoga), and biofeedback (Galvanic Skin Response and Thermistor feedback). Multimodality regimes have proven to be among the most effective approaches to stress management (Brown, 1978).

However, the multimodality program we employ is best suited for the fairly stabilized

chemically and who is not chronically agitated by hallucinations, delusions, or hypoglycemic symptoms. A certain degree of discipline and attention is critical to the program. Lower functioning students/patients are engaged in more simplified, superficial techniques.

Breathing/Meditation is a specific technique the student practices in order to tune in to subtle, internal, sensory/somatic circuits. The breath acts as a somatic bridge to both innate, pleasurable sensations, and natural body wisdom. The student is initially taught proper movement of the body musculature in breathing and a specific meditation discipline involving following of the breath. Making an involuntary function voluntary eventually leads awareness/attention to subtle sensations involved in autonomic functioning. As attention/awareness focuses on parasympathetic nervous system (PNS) activity, sympathetic nervous system (SNS) emotional reactivity (stress and tension) is reduced.

Students are also instructed in an alternate-nostril breathing technique designed to balance and integrate sympathetic and parasympathetic nervous system functioning. Philip Nurenberger (1981) cites evidence indicating that breathing through the left nostril

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patient who is somewhat normalized bio-

interrelates with depressed (parasympathetic) activity, while breathing through the right nostril interrelates with hyperactive (sympathetic) activity. The norm of one nostril being blocked is a diseased condition. Yogis have contended for thousands of years that an even, simultaneous flow through both nostrils is reflective of health. The next time you are too warm or agitated, see if your left nostril isn't clogged. Conversely, if you are relaxed (perhaps lethargic-wise) and somewhat cool feeling, be prepared to encounter a blocked right nostril. (The experiment is harmless unless passersby are watching.)

Enhanced internal awareness and increased sensation/relaxation coincide. Mental rumination diminishes (as well as emotional reactivity) for as the body relaxes, the mind becomes one-pointed and focused. Thus, conceptually the student understands what he or she will eventually experience—a quieting of the mind and emotions through awareness of pleasurable inner sensation, "feeling good" in the sensory/somatic, as opposed to the emotional sense of the phrase. Soon the student experimentally verifies that mental agitation subsides as the body relaxes and awareness is continuously focused on rhythmic breathing. When he or she experiences shifts of emotions, thoughts, and outside stimuli, the student is taught *to* view these as release of stress and not to indulge in them, but to bring the awareness calmly back to rhythmic breathing. During meditation, therefore, the entire content of the mind is viewed as a kind of desensitization hierarchy. No valence is given to mental or emotional experience during the process. Subsequently, repressed emotions (viewed as a by-product of stress release) arise and go their way, but are not indulged. The student may sometimes experience emotional catharsis and physical sensations and movement during deep levels of relaxation. However, there is no need to "work through" emotional content and, therefore, time is saved and risk minimized that the student will identify with his negativity. Instead, identity becomes more anchored in innate, pleasurable, autonomic sensations. Repressed energy is systematically released while the nervous system is in a relaxed mode,

facilitating an automatic resolution of conflict. (Spontaneous insight often follows emotional content brought up by somatic releases (Reich, 1975). Such is opposite to psychoanalysis.) Emotions and physical stresses are not reinforced by attention being focused on them. Attention/ awareness is brought back to the breathing/ meditation focal point. The student need only be assured that behind the release of emotion, "streaming" sensations, muscular vibration, and agitated thinking is relaxed sensation—that tension/pain is a matter of perspective, and if the body/mind doesn't contract in reactivity to undesirable sensation/tension, these feelings can be translated into neutral and pleasurable sensations. By breathing through sensation, pleasurable release occurs which can expand to peak or transcendental experience.

I believe that much of the fear experienced in psychosis is due to negative interpretations of expanded bodily states. Andrew Weil (1972) defines the psychotic panic reaction as a negative interpretation of infinity. Wilhelm Reich (1975) maintained that the schizophrenic's mental nightmare occurs because he has cut himself off from sensitivity to sensations he cannot integrate, physical reality distortion being due to unconscious somatic projection onto the environment. (Note that the above isn't hypothesized as the cause of schizophrenia, but as an aggravating factor.) Thus, the schizophrenic can be helped, as can all of us, by being taught to relax into his or her experience and to interpret it more positively. All experience, but particularly painful experience, becomes more negative in valence upon contraction of our being. So don't cringe the next time you stub your toe.

The process of relaxed integration of deep bodily sensation is complemented by stretching (hatha yoga) exercises. Increased sensation is yielded by stretching, whereas, increased awareness and neural integration ensue. The intelligence of the body, so to speak, is released. Increased communication between the conscious and unconscious translates into more profound mind/body coordination. We've all experienced those moments when, engaged in a familiar activity (sports, art, dance, etc.), everything suddenly "clicks"

and our performance becomes optimal and perhaps even ecstatic, unfolding as if by no direction from our "self."

Moshe Feldenkrais (1972) teaches that through bodily movement and increased bodily sensitivity, we can completely re-program ourselves mentally, as well as physically. Unimagined bodily grace and movement are not only possible, but can spontaneously introduce us to life-affirming concepts/percepts. Again, insight unfolds as the body relaxes.

The yoga stretching exercises are also designed to stimulate cardiovascular and endocrine/glandular centers (Mishra, 1963; Motoyama, 1981). We teach twelve postures, each coordinated with the breath. The postures are preparatory to meditation which is usually followed by the biofeedback modalities—GSR and Thermistor biofeedback.

Students are instructed to spend an hour per week on biofeedback equipment. Thus far, our students have opted for the GSR modality, which is more sensitive to progress than the thermistor modality. These modalities aid the student in monitoring his or her general level of relaxation and in discriminating between tension levels. He or she also learns to control a specific symptom of stress (perspiration and/or temperature), thus taking responsibility for his or her health. However, biofeedback isn't taught to teach conscious control over specific autonomic functioning so much as it is taught to aid one to become aware of normally unconscious body wisdom. More specifically, coordination of conscious and unconscious energies or nervous system circuits is the goal. Normally, our ego-dominated conscious eschews the wisdom of our body. When the ego is insensitive to natural bodily functioning, degeneration occurs. The work of the Simontons with cancer particularly makes this connection, and part and parcel of their technique is the strengthening of the immune system through relaxation (Simonton et al., 1978).

Finally, biofeedback enables the student to instantly perceive the connection between mind and body. Their progress is regularly charted and hence, reinforced.

Participating students generally represent the

full range of the DSM III, half being schizophrenic. The class averages eight to ten students who regularly chart their progress. Twenty students have entered the class since January, but only twelve have remained consistent. The dropouts generally couldn't undergo the discipline required and, coincidentally, usually exhibited severe bodily agitation and short attention spans.

Ten of the twelve students have demonstrated progress in both subjective and objective indices. Two students reported no progress with the GSR, although found the meditation/breathing and yoga exercises effective. We plan to correlate research as the stress-management-program expands through addition of more elaborate biofeedback equipment, including an Electro-myogram (EMG).

The students usually begin reporting increasingly significant progress following ten to twelve sessions, 45 minutes in length. They also practice the meditation and yoga techniques on their own once to twice per day.

Reports of experience include sensations of heaviness, lightness, tingling, increased energy, pleasure, expansion and increased well-being. Interestingly enough, nearly half the students have reported specific sensations located mid-chest. They typically report a "space opening in the chest," and/or often a feeling of pleasure and "tingling" located therein. This latter experience reportedly gradually absorbs the attention more and more during the meditative/breathing exercise. It's tempting to speculate what is happening here.

Research is increasingly pointing toward biochemical correlates in the production of stress and anxiety states. Recent research at the Sack Institute in La Jolla has isolated a brain hormone responsible for initiating all hormonal exchanges involved in stress responses. This Corticotropin Releasing Factor (CRF) is found in minute quantities in the hypothalamus. Thus, our response to stress is probably a matter of brain chemistry. However, brain chemistry might well be influenced by many variables which are inter-relating, including: genetic predisposition, toxicity in the environment, nutrition, bodily rigidity, learning, and breathing pattern.

(Control of breath has traditionally been utilized as a method to enhance bodily pleasure and well-being, as well as a vehicle to the Spirit. The Latin "spiritus" means "to breathe.") Our biochemistry can be manipulated *vis a vis* the breath, such that bodily relaxation is often initially coincidental with pleasurable sensations in the chest and the loosening of body armor therein. We've all experienced the pleasure inherent in a good sigh of expelled breath following an emotional crying spell.

Meditation methods incorporating breath and sound (mantra) quite probably influence physiological centers located in the chest area through stimulation of the thymus gland and right vagus nerve. Oxygen and carbon dioxide ratios are also affected, resulting in biochemical regulation (Mishra, 1963). These traditional meditation methods influence the body/mind at many levels, but particularly tend, through rhythm-entrainment, to vibrate the right vagus nerve (and certain brain centers) and to permit expansion of the thymus gland. The right vagus nerve is associated with parasympathetic activity, while the thymus gland is intimately connected with the biochemical control systems involved in stress reactions. A relaxed individual is an expanded individual. Muscular tension should be maintained only to the degree of proper tonus.

Itzhak Bentov (1977) a biomedical engineer, hypothesizes that meditation rhythmically entrains physiological systems so that they operate synchronously with the least amount of entropy (disorder). Specifically, he has demonstrated that during meditation a standing wave of 7Hz is established relative to the motion/rhythm of the heart (as influenced by the breath and sound). These standing waves vibrate up through the ventricle walls of the brain and are conducted along the sensory cortex where pleasure centers are stimulated, "looping"/polarizing both hemispheres of the brain. Here, physiological coherence is particularly reflected between the right and left brain hemispheres and subsequently, between the sensory and motor cortex. Enhanced mind/body coordination is an immediately noticeable result in my observation and is an important standard for gauging release from

stress.

Meditation teacher, Bubba Free-John (1978) similarly maintains (based on his years of meditation experience) that the sensory cortex is primarily stimulated *vis a vis* the parasympathetic nervous system extending into the brain core. Essentially, this means that the right hemisphere, which is responsible for non-linear, intuitive functions of mind, is being initially actualized through meditation. Right hemispheric energies synchronize, as well as cohere with, left hemispheric brain energies, eventually normalizing sympathetic nervous system reactivity. (The International Meditation Society has gathered impressive research on meditation and brainwave [hemispheric] coherence. See Banquet, 1972 for the pioneering study.)

Schizophrenics have long been known to have experiences characterized by right brain hemisphere activity; i.e., dream-like, intuitive, spatial, sensory-intense states of consciousness. However, the problem of schizophrenia should not be viewed as an inappropriate excursion into the right hemisphere, so much as a failure to integrate the right hemisphere experience with the more linear "reality-oriented" left hemisphere. Certainly, an individual's attitude and identity, relative to deeper (right hemisphere) levels of experience, are critical to the brain's coherence. Right understanding is an integral part of meditative practices. Non-linear perception may well serve a natural stress-release/pre-ventative function if perceived positively from the left side of the brain.

Thus, we've come a full circle, albeit somewhat speculatively. However, even though speculative, it's encouraging to think (and feel) that stress-management/meditation modalities may potentially encourage profound homeostatic functioning within the individual—functioning so orderly that entropy (disorder/stress) can be minimized and more creative potential realized. Certainly, all the discussed modalities interface with the biochemistry upon which behavior hinges; yet this intervention is on the level of increasing sensory/somatic awareness, perhaps the pole most complementary to externalized biochemical management of stress.

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Letters to the Editor

To the Editor

I'm sure the majority of readers of this journal are aware of food allergies, the various chameleon-like symptoms one may experience, plus the variety of laboratory tests that reveal the offending foods. This letter describes an innovative technique to aid in the difficult diagnosis of masked, hidden and addictive allergies plus a treatment plan.

To avoid confusion of semantics, the term 'allergy' means 'other response'. The word was coined in 1906 by a pediatrician, von Pirquet. He defined allergy as an "acquired, altered capacity to react to physical substances on the part of the tissues of the body."

Familial experiences with overeating, addictions, hypoglycemia, and food allergies turned my interests to preventive medicine and directed my career as a nutrition consultant.

Consequently, a large part of my nutritional counseling today is the control and management of allergies, addictions, and weight control. Masked or hidden allergies may be detected by a simple diary. Keep a daily record of all foods and supplements ingested, environmental exposures or other outside stresses, mood swings and other symptoms.

A most difficult problem of food allergies is

dealing with the addictive nature of certain foods. Some people tend to overeat, binge on foods *to* which they are allergic. These foods act as triggers, and throw them on "automatic pigout". Their rational brain short-circuits and they shove food into their mouths with a fervor unknown to any 'normal' person who hasn't experienced this frantic, overwhelming phenomenon. A 'fix' of the addictive food usually creates a euphoric high, after which they are generally miserable, bloated, nauseated, and guilt-ridden. As the 'fix' wears off, their symptoms, which drove them to indulge in the first place, return and they repeat the whole destructive process again—and again—and again.

"Trigger" foods are generally those which are highly allergenic and may be determined through laboratory testing or avoidance-challenge testing as described in my **Rotation Game** diet plan.

After determining which foods to eliminate, the remaining foods are rotated, even those which appear 'safe', for if the non-allergenic foods are eaten on a daily basis they will most likely become symptom-producing foods. After a period of time, the majority of foods which were eliminated can be rotated back

into the diet. In order to avoid future sensitivities no food can be safely consumed more often than once every four days.

I cannot stress this strongly enough. A common complaint is that clients have avoided a food or foods for a period of time so they are no longer sensitive to those foods, but now are allergic to the foods they have substituted because they've eaten them daily. Until the immune system is rebuilt and the cause of allergies corrected no food should be eaten on a daily basis. Allergies stress the system and so the stressors must be identified and eliminated. A common misconception is, "Well, if they have eaten it all their lives and are not allergic to it now, they never will be."

The symptoms produced by undiagnosed hypoglycemia and food allergies may lead patients to believe they are mentally ill. Consequently one of my goals in counseling patients is to help eliminate feelings of intimidation, humiliation, and helplessness, plus the societal implications that the patient is weak, lazy and/or neurotic.

My role as a nutritionist is to support the doctor and the patient with patient education. I believe knowledge and understanding are the keys to patient compliance, and so I developed a self-help-survival-kit for individuals with allergies.

There are several good books written about food allergies. Rather than duplicate what has already been written, I have attempted to 'fill the gap' between reading about the diet plan and the actual follow-through.

The sheer mechanics of rotation diets can be so difficult that the whole thing is rejected. So I made a game of it. The key point of the game is color-coding, so every food, or container is marked with a colored sticker to indicate which food for each day. No more searching through pages of complicated instructions in order to prepare a meal, simply glance at the color-coded calendar, or a wall chart and you are on the rotation diet.

Doris Rapp, M.D. writes of the **Rotation Game**: "A rotary diversified diet is a distinct advantage in restoring the health of many families. Food sensitivities do not occur in isolated family members, but are usually present at varying degrees in several members and

may affect very different areas of the body in the various family members. By maintaining a rotary diet, it is believed by clinical ecologists that new food sensitivities can be prevented. In addition, by using the rotary diet, one can immediately recognize the foods which cause such serious symptoms that they must be discontinued. If a food causes mild symptoms, however, and it is ingested only at four day intervals, patients frequently find that in time the symptoms diminish and they increase their tolerance to that particular food. The **Rotation Game** makes the diet easier and enables a busy parent to maintain the diet in spite of the fact that everyone in the family is busy and not always home at the same time. The accompanying recipes provide the types of foods that the family can and will eat. The color-coding eliminates a lot of giving of orders and family friction, enables even a pre-schooler to be self-reliant. . . makes eating fun again."

In his letter to the editor of this journal, Volume 11, No. 1, 114-115, 1982, Dr. William Philpott said in reference to food allergies (maladaptive responses) "... The most common cause that runs through all of these cases is the frequency with which they contact a substance. . . wears out the body's chemistry making it incapable of handling the stress of the contact. . . maneuvering these contacts becomes the central kingpin. . . around which a program is built."

In the case of food allergies, elimination and rotation help decrease the stress of contact. With the proper supplement regimen to complete the program the patient has the basic tools to get well again .

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To the Editor

Over the past decade I have developed and applied a form of treatment that appears to be remarkably successful in the treatment of some forms of mental illness. Over one thousand patients have been treated at our center and the results are very encouraging.

Patients were selected for this treatment using clinical and a perceptual test (the HOD test). They were suffering from anxiety

neurosis and agoraphobia, having a range of symptoms which included anxiety, phobias, fearfulness, irritability, insomnia and muscular tetany (pre-tetanic signs, Chvostek's sign). After the HOD test those with high perceptual scores and marked mood fluctuation were also used. These tend to be associated with elevated dopamine levels and fluctuating norepinephrine levels.

Treatment included the diet for hypoglycemia, i.e., a low carbohydrate, moderately high protein and frequent feeding, especially avoiding fructose and alcohol. This was supplemented with ascorbic acid 3000 mg per day, pyridoxine 750 mg per day, thiamine 500 mg per day, a multivitamin supplement containing cyanocobalamin 200 micrograms, folic acid 50 mg, biotin 50 micrograms, methionine 100 mg and inositol 200 mg and a multimineral tablet containing at least 50 mg of zinc sulphate. In addition, patients chewed 400 mg of calcium and magnesium orotate, holding it in one's mouth at least 30 seconds, whenever symptoms develop or ten minutes before exposure to any anxiety-creating situation.

The object of this supplementary program is to increase levels of cAMP by inhibition of phosphodiesterase by ascorbic acid thus increasing uptake of lactate by the liver, to diminish fluctuations in glucocorticoid hormone output, to reduce biochemical stress, to improve synthesis of some neurotransmitters and to replace vitamins likely to be deficient due to malabsorption. Orotates are used by lingual absorption to bypass the liver.

Typical, Illustrative Case History

A 26 year old female described by the referring physician as "neurotic" and possibly agoraphobic. She found it almost impossible to face large crowds such as one expects in public vehicles and supermarkets. She would begin to feel palpitations, to shake, and feel a wave of panic at the mere thought of such a situation. This made her practically a recluse and it was only with considerable effort that her incredibly patient husband managed to take her to our center.

The following baseline parameters were taken: pulse rate, hand grip strength, blood pressure, urinalysis, electrical skin conductivity

(galvanic skin response). The patient was asked to describe her feelings and symptoms. She was then given 800 mg of calcium and magnesium orotate as described above, and she was asked to "imagine" herself going shopping to her supermarket via a crowded bus. She was able to undergo this procedure with a considerable decrease of her usual panicky feelings. Subsequent measurements of all parameters previously studied revealed only minor elevations. The procedure was repeated twice a week for one month.

At the end of that period she felt no anxiety whatever at the thought of crowds although she admitted that some residual "worry" was still there because of her long-learned responses. The following week she decided to try the "real" situation and did in fact go shopping. She was quite normal and has remained so ever since.

Apart from the previously described effects I feel that the diminished anxiety response is directly related to lowering plasma lactate levels by direct binding action of ionized calcium. Further help is obtained by lowering dopamine levels and restoring orderly neurotransmitter synthesis. A paper on this will be submitted shortly by myself.

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To the Editor

In response to the article **Mercury: A Factor in Mental Disease**, Volume 11, Number 1:

The human organism has only limited ability to detect health or life hazards. This inability is compounded by the difficulty of long term vs. short term intellectual deduction of cause and effect. Let me give an example: ultraviolet sunlight will cause a sunburn within hours which is not difficult to trace back. X-Rays to the neck area can cause thyroid malignancy in several decades—the cause effect relationship is difficult to trace back and was impossible to predict at that time.

The article on mercury toxicity is very important to analyze because mercury/silver amalgams are so widely used. I am, however, reminded of a case of a man with multiple complaints and extreme bipolar hypomanic behaviour who thought that his problem originated in the subclinical root infections of mercury/silver amalgam filled teeth. He proceeded with total tooth extraction and full dentures only to end up with expense, inconvenience, and no change in his health picture.

From the preventive point of view the message given is clear: avoid mercury/silver amalgams and use plastic quartz filling. It is better still to avoid having cavities, but perhaps by other means than fluoride treatment. Fluoride in my experience of ecologically oriented practice can give rise to other problems (or sometimes similar symptoms) to the mercury poisoning.

I would like Dr. Huggins and any other clinician familiar with the problem to answer the following questions:

1) What proportion of patients remained unchanged after amalgam removal?—this result suggesting another cause for the health disorder.

2) Is only the amalgam exposed to the saliva harmful, or is it also the amalgam filling in gold capped teeth?

3) Are those persons who react to the amalgam a distinct population subgroup with higher than average sensitivity to mercury? Could these be only people with certain inborn enzyme deficiency and/or lacking nutritionally other essential factors such as cystine. This is an interesting possibility since some mercury toxicity is related to the myocardium which in turn is rich in taurine which is formed from sulfur containing amino acids methionine, cystine. Administration of taurine has been found to decrease cardiac arrhythmias as well as brain seizure activity.

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To the Editor

This letter responds to the request of Chris M. Reading, B.Sc, M.B., B.S., member of the Royal Australian and New Zealand College of Psychiatrists (Letters to the Editor, J. Orthomolecular Psychiatry 11, Volume 2, 111-112, 1982), for the opinion of world authorities.

Certainly, I do not presume to have the title of a world authority on ortho-molecular therapy; however, I feel that it is appropriate for practitioners in all areas of orthomolecular medicine to respond. As you know, I have worked in this field, treating patients with mental retardation and other genetic diseases, with the "U" Series, for more than forty years. I have seen these patients improve under this regimen; for many of them, there is no other treatment. This regimen has been used successfully both here and abroad, especially in Japan. The government of Norway has now accepted its use, and Norwegian physicians may dispense the "U" Series to their Down's syndrome patients.

Therefore, I would like to point out that by criticizing orthomolecular psychiatry, and quoting the faulty conclusions of the 1973 American Psychiatric Association task force, those representatives of the Royal Australian and New Zealand College of Psychiatrists, Royal Australasia College of Physicians, and Royal College of Pathologists of Australasia reveal that they have failed to keep up with information about the underlying biochemical basis of the diseases they treat. Their own treatments include psychotherapy, symptomatic drug treatments, surgery, or convulsive shock therapy, with a few attempts made to normalize the patient's biochemistry, as with lithium for manic-depressive disease. Orthomolecular therapy is based on the understanding that certain substances natural to the body, nutrients, act as co-factors in metabolic processes and must be supplemented for some individuals in order to provide the necessary biological environment for proper physical and mental function.

In 1968, Pauling pointed out, "Biochemical and genetic arguments support the idea that orthomolecular therapy, the provision for the individual person of the optimum normal concentrations of important normal

constituents of the brain, may be the preferred treatment for many mentally ill patients." The same may be said for patients with other metabolic disorders.

In 1950, Williams introduced the genotrophic concept, which proposes that disease with a hereditary basis may occur because of the unusual nutritional needs of the affected individuals. He has also often pointed out that suboptimal nutrition prevails throughout the biological kingdom, that human nutritional requirements are highly individual, and that teamwork among nutrients is essential (Williams, Heffley, Yew, Bode, 1973).

Since 1935, I have emphasized the problem of waste-product accumulations in metabolic disorders, and in 1972, I published the concept of "environmental pollution" in which abnormal excesses of certain chemicals lead to deficiencies of others. In genetic diseases of early onset and in chromosomal trisomies, the deficiencies cause developmental retardations, among other problems. Inborn errors of metabolism that appear later in life, possibly triggered by poor nutrition, stress, addictions, or allergies, also lead to excesses of some substances, because of disordered metabolism, inefficient waste elimination, and further accumulations of waste products. For example, in non-insulin-dependent diabetes, the problem with carbohydrate metabolism is not so much insufficient production of insulin as the liver's inability to activate endogenous insulin. In order to bypass the liver, insulin is injected.

There are two types of stored substances, as well as nutritional deficiencies, in these diseases. In inborn errors of metabolism, the substrate preceding the enzymatic block accumulates, and alternate pathways may produce abnormal metabolites. For example, phenylalanine and phenylketones accumulate in PKU. There is a deficiency of most other amino acids as well as the end products of phenylalanine, producing the typical faces of these patients. If any of these substances irritates the brain or interferes with its proper biochemical environment, mental symptoms appear. Abnormal or excessive metabolites may be excreted by liver or kidneys, lungs, nasal secretions, sweat or oil glands, hair, tears, or

may be found in plasma or spinal fluid. Unconverted substrates may enter all organs, leading to the characteristic features of specific storage diseases.

The combination of metabolic accumulations and malnutrition leads to underdevelopment and malfunction of all organs, specifically excretory organs, producing the secondary accumulations of unexcreted waste products: water-soluble substances, e.g., uric acid; minerals, especially calcium; and fats. The same sort of "environmental pollution" occurs in trisomic syndromes. In these situations, the products of excessive genes begin to accumulate soon after the affected individual's conception, producing massive metabolic abnormalities. Space needed for transport of nutrients is taken by the extra gene products. Malnutrition leads to retardation, and as in the inborn errors of metabolism, unexcreted wastes are stored.

In addition to the more conventional treatment modalities, such as dietary restriction of the substrate, there are several ortho-molecular ways of getting around the pollution, namely: (1) to bombard the system with high dosages of vitamins and minerals, as Harrell and co-workers, testing Williams' genotrophic concept, have done (Harrell, et al., 1981); (2) to determine more specifically which enzymatic step is blocked and to provide necessary co-factors, especially the vitamins and minerals that participate in that enzymatic step, as well as the lacking products, if available; (3) to remove the stored substances while providing necessary nutrients. As one of the first methods of treating genetic disorders that systematically utilized what were then considered large dosages of vitamins, minerals, enzymes, and essential fatty acids, the "U" Series therapy, previously discussed in this journal (1975, 1981), has used the third approach.

When stored wastes are eliminated, the underdeveloped structures can utilize the supplemented nutrients, and their development accelerates, as can be seen in the treatment of Down's syndrome patients. In a chromosomal trisomy, no genes are missing. Therefore, elimination of waste accumulations and nutritional supplementation may bring the patient's condition to the stage at which his/her body can either utilize or

excrete the excessively produced gene products.

If the cause of the retardation is an inborn error of metabolism rather than a chromosomal trisomy, treatment should minimize the accumulations of the substrate, by dietary restriction therapy; reduce the accumulated wastes and synergistically and simultaneously supplement nutrients, with the "U" Series type of treatment; and supply the lacking enzyme, if possible. If it is not possible to provide the lacking enzyme, the product following the enzymatic block (e.g., tyrosine in PKU) and other deficient final products should be supplied. One of the obstacles to supplying the missing enzyme was pointed out when Dr. Roscoe O. Brady and coworkers at the National Institute of Neurological Diseases and Stroke isolated the lacking enzymes of Tay-Sachs disease and five other sphingolipidoses, between 1965 and 1969. The accumulations characteristic of the disorders prevented the administered enzymes from reaching the sites where they were needed.

Schizophrenic patients, like patients with other genetic disorders, may have metabolic levels that have become massively deranged, with excesses of some chemicals and deficiencies of others. Removal of the excesses by means of the "U" Series rationale may complement megavitamin therapy. In any case,

the RANZCP and APA 1973 task force opinions require refutation from all sectors of orthomolecular and nutritionally based therapy. The patient who is mentally retarded or mentally ill is also a person who requires optimal nutritional support, especially of those nutrients, such as niacin, pyridoxine, and ascorbic acid, that participate in numerous metabolic processes.

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