

Epistemological Perspectives of Physical Disease from the Psychodynamic Point of View

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Introduction

At this point in our scientific history, there can no longer be any doubt that personal experience, significant emotional life events, personality structure, psychodynamics, or the referent of whatever label we assign to the personal sector of an individual's life, has a profound effect on physical or somatic processes, on health and disease.

Ample empirical evidence from psychophysiological and psychosomatic studies has been gathered to make it unequivocal that behavioral-somatic relationships clearly do exist. And how could it be otherwise? Everyone knows from personal experience that upsetting life events often result in some kind of somatic disturbance, for example, in changed gastrointestinal motility or in tachycardia, to mention only two examples. Galen, Hippocrates, and other classic founders of medicine, as well as the philosophers Spinoza, Descartes, Leibniz, and their contemporary offshoots, have pointed to the intricate interaction between psychological and somatic phenomena in their statements. The mind-body problem is not new but has been with us for a long, long time. Only it seems that each generation has to reexplore the relationship and reformulate it in terms of its own framework and vocabulary.

Pluralistic Epistemological Framework

However, the conceptualization of psychosomatic relationships is tricky, and has been formulated in several different ways by different philosophers and theoreticians. A basic distinguishing feature by which these theories can be classified is whether they belong to a pluralistic or a monistic epistemological framework, that is, to a Cartesian or a Spinozistic type of approach. The dualists/pluralists must conceptualize the ecological, social, psychological, and somatic phenomena as parallel process streams that interact with each other. For example, they conceptualize somatic and psychological systems as basically independent of each other, except under conditions of stress when

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“spill-over” occurs from the “stressed” system to the other systems. The same can be said about the interaction between ecological and sociological systems, on the one hand, and the psychological and somatic systems, on the other. Thus, most dualistic researchers talk only about a spill-over from one system to the other when a particular stress or disorganization obtains in one of the systems they are observing, e.g., the social system. They do not clearly point out that the systems always are “interwoven,” whether in organization or disorganization, upset or calm. This sectorialization of science probably has come about due to the convenience it offers to a researcher, enabling him to deal only with his sector of the ongoing process, without being too involved in other sectors of the total process. Other sectors are considered only when particular conditions prevail which make it urgent and imperative to consider also these other sectors of the total system in order to understand the focal sector under consideration. This theoretical shortsightedness is probably responsible for the piecemeal, rudimentary, and disorganized insights we have gained from stress concepts and other emergency-oriented formulations.

Monistic Epistemological Framework

The monistic position is quite different. According to this view all the subsystems actually emerge as the observers' formulations of only a sector, or part, of a holistic total system and cannot be understood as interactive agents, since they simply express different descriptions, made from different viewpoints and levels of investigation, of the behavior of the total social-psychological-somatic organism or conglomeration of organisms, that is, the social system. This approach holds that not only under stress conditions do systems interfere or interact with each other but that the organism, or groups of organisms, constantly can be described on many different levels of observation simultaneously and that these descriptions reflect one ongoing process involving the organisms, only understood from different viewpoints. Any thought or feeling is expressed simultaneously in somatic processes and behavior, any social change in psychological and physiological changes, etc. The old-fashioned reductionistic thinking, which considers a physiological description of processes to be more basic or causative than other descriptions or formulations, obviously is both humorous and defunct, as seen from our present epistemological

platform, and so are the more recent attempts to talk about multifactorial influences as if these many factors were independent agents and sources of change, rather than multiple expressions of the very same and identical subject matter—the organism or the network of organisms.

The usual dichotomy between genetic or inherited, and acquired or environmental factors further beclouds our thinking, because this dichotomy implies that there somehow is a qualitative difference between these two levels of influence, the genetic being more physiological, the acquired more behavioral. This, of course, is nonsense. The predisposition to a certain response pattern or to a given developmental pattern may exist on any level of observation, may exist in a social or psychological system as well as in a physiological system. It is usually assumed to operate when known influences on the organism do not seem to carry much of the observed variance. This definition-by-elimination characteristic of the concept predisposes genetics to be used as a wastebasket for phenomena about which we do not know enough. Also, due to the magic of reductionistic thinking, the genetic is nearly automatically relegated to the physiological level of description, thus again reinforcing dualistic concepts of pathogenesis.

In order to attempt a resolution of these intricate psychosomatic epistemological problems, this writer has developed a social-psychological-somatic theory of complementarity¹⁻⁵ delineating one possible model encompassing both behavioral and somatic processes within one framework and, in addition, including some hypotheses concerning the content of the conditions predisposing to overt pathology in either the behavioral or the physiological sphere. This model has borrowed conceptual units from Niels Bohr's complementarity theory in physics,⁶ which emphasizes the interdependence between theory and method, and observations in nuclear physics, and from Halliday's,⁷ Grinker's,⁸ Allport's,⁹ and von Bertalanffy's¹⁰ work on open fields and open systems.

We shall, at this point, not go deeply into the content of the specific conditions of drive conflict and emotion and the determining mechanisms of defense, which, according to my theory, are involved in the "choice" between behavioral and somatic regression, since this has been presented elsewhere,^{1,3-5,11} but shall simply point out that this theoretical approach deals with social, psychological, and somatic systems within one framework, considering them to be alternative descriptions of one central subject matter: the psychobiological organism and the organization of such organisms into systems.

Sociological and Environmental Factors in Illness

Having stated this monistic bias, let us take a look at the role that psychological processes may play within the total matrix of processes, keeping in mind that this description is only one of several possible formulations. Focusing on psychological phenomena and on physical illness, rather than on health, there are immediately two

different ways in which we can approach the role of these psychological phenomena. First, we may start with the broader sociological-ecological environment, as epidemiologists and sociologists do, and ask which intervening role, in the mediation between social conditions and physical health, is played by psychological experiences that reflect changes in the environment. Second, we may start with the psychological states themselves, considering other fields secondary or derived, and establish connections between these psychological states and somatic disease states.

Concerning the first approach, we must here discriminate between those social and ecological variations which are imposed on the individual, independent of his own activities or doing, and those that come about when the individual is an active agent in determining the outcome of his environmental or ecological status. Immigrant generation, ethnic group, parents' religion, etc., are variables reflecting conditions over which the individual does not exert any control, whereas other conditions, such as geographic or occupational mobility, occupational level, population density, or status crystallization are variables that are partly dependent on the individual's psychodynamic processes. Philosophically, there is no reason whatever that ecological phenomena should not be described without reference to psychological systems and then be related to somatic disorganization, or physical illness. However, in most cases the psychological state is used as an intervening variable between the ecological-sociological condition and the related somatic illness. When Durkheim talked about anomie and suicide, he hypothesized personal despair and alienation as intervening variables.¹² When Cassel¹³ talks about the effects of social disorganization, he introduces a number of mediating psychological and physiological concepts in order to lead us from the state of social disorganization to the physical illness. This tendency may have to do with the fact that our most spontaneous reference is to the individual organism, rather than to a system of organisms, when we consider the physical process, or illness, in the organism as an outcome. Although conceptually permissible, it is awkward to think of illness in a person without including the person's psychological phenomenology as an intervening step. We may even state that at our present level of development, we do consider a social system as a conglomeration, organization, or system of individual organisms, rather than as a superorganism, which has individuals as its parts, thus operating within parameters reflecting what one might label "reductionism to the individual." It is hardly conceivable to talk about physical illness in the individual (not in the system of individuals) without considering something going wrong within this individual organism. Thus, on this level of conceptualization, both "independent" and "interactive" sociological and ecological conditions most often are conceived of in terms of their effect on the intervening psychological variable: psychological experience. Conditions of social disorganization result in personal perception of alienation and bewilderment, which triggers emotions of depression and anxiety, which again are associated with endocrinological or neurological aberrations, making the

individual more susceptible, by some pathway, to physical illness.

In the case of the independent ecological variables, the concepts which have been used as intervening psychological mediators usually have been social psychological in nature, such as alienation, authoritarianism, group support, etc., whereas, in the case of the interactive social conditions mentioned above, the psychological intervening variables more often have been drawn from the personality sector of psychology, e.g., self-image, role definition, work stress, dissatisfaction, etc. In the former case, the psychological concepts, to a large degree, only translate what is expected to be the personal counterpart of a clearly defined social condition, whereas, in the latter case, some psychodynamic variables are implicated, although only marginally. In other words, the structural position of the psychological variables within the explanatory sequence determines what level of psychological construct is applied as an intervening variable.

Psychodynamic Approach to Illness

We now return to consider the second type of approach to psychological variables, in which we start with psychological rather than sociological concepts and relate psychological states to particular physical conditions. Environmental conditions here are considered through the screen of the individual's perception and are relevant only to the degree that they are significant, consciously or unconsciously, for the individual's personal needs, feelings, and coping styles. Disregarding distant history, we may consider that the psychodynamic approach to physical health had its renaissance in the 1930s and 1940s with the flourish of psychosomatic studies generated by psychoanalytically oriented clinicians and researchers, particularly in Germany and the United States. Alexander and French,¹⁴ Deutsch,¹⁵⁻¹⁶ Weiss and English,¹⁷⁻¹⁸ Dunbar,¹⁹⁻²⁰ and other well known psychoanalytical writers introduced concepts of conversion, organ neuroses, vegetative regression and equivalence, and other basic concepts into the field of physical health and illness. The psychoanalytical psychosomatic theories, at least during the original phases, did not take into consideration particular ecological or sociological conditions but focused on the psychodynamic meaning of physical disease.

Alexander,²¹ as a main spokesman for the psychosomatic approach, hypothesized that chronic disturbances of the body develop under the influence of prolonged and returning emotional disequilibria, mediated by the autonomic nervous system. He thought that, within the autonomic nervous system, sympathetic arousal resulted from the repression of hostile self-assertive impulses, producing increased heart rate and blood pressure, dilation of blood vessels in skeletal muscles, and increased metabolism, leading to essential hypertension, rheumatoid arthritis, thyrotoxicosis, and disturbances in carbohydrate metabolism related to diabetes mellitus. On the other hand, repression of wishes to retreat to a passive and dependent

state—the so called “vegetative retreat”—resulted in parasympathetic arousal, in gastric neurosis, diarrhea, colitis, cardiospasm, and other regressive patterns. Margolin²² emphasized developmental aspects of somatic symptomatology and linked particular locations and types of physical involvement to the analytical developmental phases: oral, anal, and genital organization, relating changes in central regulation versus local tissue autonomy, reversibility of symptom, and general versus specific involvement of tissue to the genetic symbolic level on which a given conflict is expressed in the somatic symptom. Roy Grinker^{8,23} emphasized that biological systems are open and that the functioning of the individual cannot be understood except by a study of its transactional processes in a total field or in a multitude of successive fields from birth to death. Thinking developmentally, he also states that a somatic symptom complex can develop only as the result of lasting traumatic impressions made upon the total system during early developmental stages, before differentiation of the somatic and psychological had taken place. Regression under stress leads to a discharge of somatic patterns which were part and parcel of the total organism's reaction at earlier developmental stages. Kubie^{24,25} discriminates between different organ systems on a functional basis and relates them either to the external world, the internal economy, instinctual functions, or the body image, thereby aiding in the definition of neurophysiological mechanisms involved in the production of the illness. He also has analyzed with great clarity the symbolic central representation of the somatic symptom and thus has contributed to the understanding of the “language of the body.” We have referred here only to a few among many significant psychosomatic researchers and research problems produced by the psychoanalytic approach. This is not the place to introduce in detail this research area. Instead, we shall attempt to summarize the conceptual core of these approaches.

The psychodynamic approach, in contrast to the social-psychological or personality approaches, operates with concepts of drive, emotion, and defense, rather than with cognitive and ideational concepts. Further, since drives are generated within the individual, and since emotions phenomenologically are experienced within rather than outside the individual, the emphasis decidedly is on the intrapsychic rather than on the interpersonal or social behavioral fields. From the analytical point of view, social representations achieve their greatest significance as symbols, or derivatives of interpersonal or dyadic functions, e.g., experiences relating to self or to early parent-child relationship parameters. The social scene thus becomes a stage for displacement of personal dynamics rather than providing the raw material for personal experience. The closest that social conditions come to attain significance for the individual in the psychoanalytical system is via the child-rearing patterns of the parents, particularly the mother, during the earliest formative years. Thus, in the psychodynamic approach, the parents' social experiences may be more important to the individual's physical health than are the social experiences of the individual himself.

Another important feature of the psychodynamic approach is that the "weak link," or predisposition, hypothesis, equating all diseases as random expressions of social stress or disorganization, has been replaced by specificity concepts relating particular organs and organ systems to particular types of conflict, emotion, and defensive coping. The fact that many different disease syndromes occur under conditions of social disorganization does not, of course, necessarily lead to the conclusion that these different manifestations represent a random array of conditions or "predispositions." Rather, this finding simply indicates that the sociological net is too coarse, that those variables with which environmentalists operate are of a type or order which cannot possibly predict an individual's "choice of symptom," since the variables involved in such a choice are not represented on this level of analysis. The tendency to explain the variety of symptoms that occur in individuals under stress as being determined by something genetic, a predisposition, is an example of the "wastebasket principle," according to which one must assign a label or name to differentiations which are not explained by one's theory.

Somatic Symptom Formation

Concerning the specificity aspects of symptom formation, this writer has previously described a number of pathways leading from psychological content of conflict to somatic symptom, which may serve to predict what particular symptoms an individual will develop, based on his main fantasies and their character and on the way in which he defends against them.¹ Of course, both content of fantasies and defensive style are, as we now know, related to social conditions and, as such, can be studied within other than the psychoanalytical frame of reference.

Just as psychoneurotic symptom formation must be understood as an intricate interplay between different interacting drives, external and internal pressures, and ego defenses, so somatic symptom formation also results from a complicated process involving the interplay of several mutually overlapping conflict-antecedents. The following are possible mechanisms involved in the formation of somatic symptoms:

1. The structure of an organ or an organ system may be represented cognitively, consciously or unconsciously, on the basis of interoceptive cues and other ideational content available to the individual. Such structural perception of an organ or organ system, e.g., the heart or the circulatory system, may contribute to the selection and usage of this system for the somatic expression of a given psychological conflictual content.

2. The function of an organ or an organ system may have additional symbolic meaning to the individual, often represented in fantasies and dreams, and usually related to general imagery of a sort which both Jung and Freud discussed in their formulations of the "common unconscious" and in the principles of dream interpretation.

Alexander's discussion of the imagery and symbolic meaning related to the function of the lower colon and the anal sphincter, relating the function of these body areas to rather basic experiences with toilet training and mother, with withholding and angry dispensing, may serve as an example of the functional metaphors expressed in organic dysfunctions.

3. An organ may be related subjectively to certain emotions and affects as the heart is to love (selected tree trunks in the spring may testify to this).

4. In addition, secondary physiological effects of emotion may produce strain on selected tissues, thus predetermining the development of later somatic symptoms in these tissues. Anger and its relationship to hypertension and other sympathetic conditions (preparation for action), and anxiety and its pull toward regression and passivity, manifested in parasympathetic states such as gastric hyperacidity leading to ulcers and in colonic hypermotility and diarrhea, are examples of this specificity linkage.

5. Finally, the content of current conflict, involving the ecological and social environment, may become symbolically translated and represented in one or more organs or organ systems, with the result that the function of these may become stimulated, inhibited, or modified in further interaction with the other factors.

This fifth channel of specificity may be the most important to consider in interdisciplinary approaches to physical health, since it rests on an internal translation of an external social condition, i.e., a reversal of displacement. In classic dynamic theory, the external structure is understood as a displacement from the internal psychic structure, serving as an example or manifestation of an individual's intrapsychic state. What I am suggesting here is that, based on the "displaced" investment in, or cathexis of, the environment, the behavior of this environment may be translated back into the intrapsychic and modify its function and structure, in turn determining the somatic manifestation of the process. Thus, because individuals have the propensity to invest in objects beyond themselves, the behavior of these objects (here are included the gross ecological and social behaviors of object systems) may influence the intrapsychic and somatic systems, because they are translated back into the organism as long as investment in the object is maintained. As is well known, progressing illness loosens and finally deletes the "proxy investment" in the environment and replaces it with narcissistic investment in the original carrier of cathexis, but in the normal adult individual, also during early stages of physical disease, investment in the environment *is* being maintained, and expression of the external situation, as perceived by the individual, *can* be expressed along the mentioned pathways in the form of physical symptomatology.

Specificity

As already alluded to above, the concept of specificity—the determined development of one particular illness

rather than another—is a controversial topic about which epidemiologists and psychodynamicists disagree, probably for reasons residing in the particular type of data with which these two groups of researchers occupy themselves. Epidemiologists work with broadly defined concepts, large groups of people, and public methods, not usually involving intimate contact with the subjects under study. They use stress concepts, whether dealing with bacteria or social disorganization, and relate these to incidence rates in the population. Cassel's and Syme's papers illustrate this point. They study groups at risk, such as poorly prepared executives, smokers, or unmarried people, and observe that they develop higher incidence rates of a large variety of physical diseases, suggesting that a generalized rather than a specific somatic effect prevails. In contrast, analytically oriented clinician-researchers, usually dealing with relatively small numbers of patients, whom they know intimately and in depth, and using more narrowly defined hypotheses, are prone to observe in their subjects relationships between specific conflicts and particular illnesses, which seem to present some particular and relevant solutions to the dilemmas experienced by these patients. Although these two different views of specificity can be understood on the basis of subject matter, the conceptual problem still must be resolved.

From the psychodynamic point of view, the explanation resides in the fact that a given environmental stress or disorganization can be interpreted in a variety of ways by the individuals affected, with each perceptual solution reflecting the particular psychodynamic conflicts of the perceiver. Therefore, similar social conditions may well lead to different etiological outcomes, because they are interpreted in different ways by the individuals who develop the different sets of symptoms. Also, the psychodynamicist will assume that the social stress carries a much smaller part of the total variance than that presumed by the environmentalist, thus postulating that adding a social stress to already existing internal conflicts may only augment the intensity of a symptom, which has previously been developed for reasons residing within the individual, prior to the particular social stress situation.

These considerations lead us to another significant difference between the epidemiological and psychodynamic approaches. The epidemiologist works with given statistical covariances which may prompt him to apply a variety of different hypotheses in order to link correlating conditions with each other. The psychodynamicist, on theoretical grounds, considers the symptom to be a highly determined, functional expression of drive release patterns, emotions, and coping mechanisms, emphasizing the necessity and meaningfulness of the illness within the individual's dynamic household. The physical symptom, much like a neurotic or psychotic manifestation, is never perceived as a random or chance phenomenon, but rather as a determined event which occurs for various specific reasons, and which could not be replaced by any other symptom without changing the configuration of variables involved in the process of symptom development.

Dynamic Variables

What, then, are the dynamic variables that have been implicated in recent psychosomatic research? Specific affects and emotions, and the individual's efforts to cope with these affects, have been described in a number of studies. Asthma²⁶⁻²⁹ has been linked to crying, sadness, and dependency and to emotional arousal associated with regressive wishes to incorporate and eliminate an ambivalent and dangerous object. The asthmatic exacerbation probably occurs when such fantasies and impulses are denied and must be expressed through a somatic rather than a conscious behavioral medium. Several workers have observed that object loss, despair, depression, and hopelessness often are precursors to clinical cancer.³⁰⁻³⁴ Depression and hopelessness are specific reactions to object loss and, when denied, seem to usher in clinical cancer, possibly via endocrinological and immunological pathways, due to decreased resistance in these systems. Anger and rage, and the inhibition of these affects, have been related to hypertension and arthritis in several studies,³⁵⁻³⁷ and anxious feelings about self, combined with compensatory achievement drive and competitiveness, have been related to coronary heart disease in our own studies and in those of several other researchers.³⁸⁻⁴¹ Rosenman and Friedman,^{42,43} as well as Jenkins and Zyzanski,^{44,45} have shown the potency for prediction of coronary heart disease carried by the so called "Pattern A," which can be broken down into three dimensions: "hard driving and competitive," "speed and impatience," and "job involvement and activity." In other words, specific affects are related to specific conditions, rather than being related in a random fashion to all illnesses.

Another dimension which has been applied in several recent studies is the quality and quantity of ego defensive efforts exhibited by the individual. Relationships have been demonstrated between repression and denial and lung cancer,^{46,47} lymphomas and leukemias,^{48,49} and cancer of all sites.^{2,50} In a study of prognosis in breast cancer, Katz⁵¹ demonstrated that different types of ego defenses are related to particular psychoendocrine reactions, which again are related to the prediction of favorable versus unfavorable prognosis.

These are just a few examples of how psychodynamic researchers operate. They study well delineated psychological phenomena, such as affects or defenses, and relate these to simultaneously unfolding endocrinological processes and, finally, to the target illness under consideration. Whereas psychologically based psychosomatic studies thus involve experiential, physiological, and physical illness data, they often have introduced sociological data only for control purposes, rather than including them in an open system matrix which allows for multilevel integration of all relevant material. It is hoped that, in the future, more of us will be involved in research designs which accommodate relevant monistic and multidimensional theoretical models, brushing aside the old controversies about the greater or lesser significance of given process levels (e.g., physiological,

sociological), instead integrating these several levels in a larger matrix expressing the total process.

References

1. Bahnson, C. B., and Bahnson, M. B. Cancer as an Alternative to Psychosis: A Theoretical Model of Somatic and Psychological Regression. In *Psychosomatic Aspects of Neoplastic Disease*, edited by Kissen, D. M., and LeShan, L. L. Pitman, London, 1964.
2. Bahnson, C. B., and Bahnson, M. B. Role of the Ego Defenses: Denial and Repression in the Etiology of Malignant Neoplasm. *Ann. N. Y. Acad. Sci.* 125:827-845, 1966.
3. Bahnson, C. B. Gegenwärtige Strömungen in der Psychosomatischen Forschung und Skizzierung eines Komplementären Theoretischen Modells. *Therapie über das Nervensystem. Hippokrates* 6:11-45, 1966.
4. Bahnson, C. B. Psychophysiological Complementarity in Malignancies: Past Work and Future Vistas. *Ann. N. Y. Acad. Sci.* 164:319-334, 1969.
5. Bahnson, C. B. Basic Epistemological Considerations Regarding Psychosomatic Processes and Their Application to Current Psychophysiological Cancer Research. *Int. J. Psychobiol.* 1:57-69, 1970.
6. Bohr, N. *Atomfysik Og Menneskelig Erkendelse*. Y. H. Schultz Forlag, København, 1957.
7. Halliday, J. A. Principles of Aetiology. *Br. J. Med. Psychol.* 19:369-380, 1943.
8. Grinker, R. R. *Psychosomatic Research*. W. W. Norton, and Co., New York, 1953.
9. Allport, G. W. *Pattern and Growth in Personality*. Holt, Rinehart, and Winston, New York, 1961.
10. von Bertalanffy, L. *General System Theory*. George Braziller, New York, 1968.
11. Bahnson, C. B. Theory and Research on the Complementarity of Regression in Somatic and Behavioral Disorganization. Paper presented at the 78th annual meeting of the American Psychological Association, Miami, Florida, September, 1970.
12. Durkheim, E. *Suicide*. The Free Press, Glencoe, Illinois, 1951. (Translated from *Le Suicide*, Spaulding and Simpson, 1930.)
13. Cassel, J. An Epidemiological Perspective of Psychosocial Factors in Disease Etiology. *Am. J. Public Health* 64:1040-1043, 1974.
14. Alexander, F., and French, T. M. *Studies in Psychosomatic Medicine: An Approach to the Cause and Treatment of Vegetative Disturbances*. Ronald Press, New York, 1948.
15. Deutsch, F. On the Formation of the Conversion Symptom. In *On the Mysterious Leap from the Mind to the Body*, edited by Deutsch, F. International Universities Press, New York, 1959.
16. Deutsch, F. *Body, Mind and the Sensory Gateways*. Basic Books, New York, 1962.
17. Weiss, E., and English, O. S. *Psychosomatic Medicine*. W. B. Saunders, Philadelphia, 1943.
18. Weiss, E., and English, O. S. *Psychosomatic Medicine: A Clinical Study of Psychophysiological Reactions*, Ed. 3. W. B. Saunders, Philadelphia, 1957.
19. Dunbar, F. *Emotions and Bodily Changes*. Columbia University Press, New York, 1935.
20. Dunbar, F. *Psychosomatic Diagnosis*. Hoeber Medical Division, Harper and Row, New York, 1943.
21. Alexander, F. *Psychosomatic Medicine*. W. W. Norton and Co., New York, 1950.
22. Margolin, S. Genetic and Dynamic Psychophysiological Determinants of Pathophysiological Processes. In *The Psychosomatic Concept in Psychoanalysis*, edited by Deutsch, F. International Universities Press, New York, 1953.
23. Grinker, R. R., and Robbins, F. P. *Psychosomatic Casebook*. Blakiston, New York, 1954.
24. Kubie, L. The Central Representation of the Symbolic Process in Relation to Psychosomatic Disorders. *Psychosom. Med.* 15:1-7, 1953.
25. Kubie, L. The problem of Specificity in the Psychosomatic Process. In *Recent Developments in Psychosomatic Medicine*, edited by Wittkower, E. D., and Cleghorn, R. A. J. B. Lippincott, Philadelphia, 1954.
26. Knapp, P. H., and Nemetz, S. J. Acute Bronchial Asthma. 1. Concomitant Depression and Excitement, and Varied Antecedent Patterns in 406 Attacks. *Psychosom. Med.* 22:42-56, 1960.
27. Knapp, P. H. Acute Bronchial Asthma. 11. Psychoanalytic Observations on Fantasy, Emotional Arousal, and Partial Discharge. *Psychosom. Med.* 22:88-105, 1960.
28. Knapp, P. H., and Bahnson, C. B. The Emotional Field—A Sequential Study of Mood and Fantasy in Two Asthmatic Subjects. *Psychosom. Med.* 25:460-483, 1963.
29. Knapp, P. H., et al. The Context of Reported Asthma during Psychoanalysis. *Psychosom. Med.* 32:167-188, 1970.
30. Kowal, S. J. Emotions as a Cause of Cancer: Eighteenth and Nineteenth Century Contributions. *Psychoanal. Rev.* 42:217-227, 1955.
31. Greene, W. A. The Psychosocial Setting of the Development of Leukemia and Lymphoma. *Ann. N. Y. Acad. Sci.* 125:794-801, 1966.
32. Schmale, A. H., and Iker, H. P. The Psychological Setting of Uterine Cervical Cancer. *Ann. N. Y. Acad. Sci.* 125:807-813, 1966.
33. LeShan, L. An Emotional Life-history Pattern Associated with Neoplastic Disease. *Ann. N. Y. Acad. Sci.* 125:780-793, 1966.
34. Bahnson, C. B. Psychiatrisch-psychologische Aspekte bei Krebspatienten. In *Proceedings of the 73rd Convention of the German Society for Internal Medicine*, pp. 536-550. J. F. Bergmann, Munich, 1967.
35. Hokanson, J. E., and Burgess, M. The Effects of Three Types of Aggression on Vascular Processes. *J. Abnorm. Soc. Psychol.* 64:446-449, 1962.
36. Reiser, M. F., et al. Psychological Mechanisms in Malignant Hypertension. *Psychosom. Med.* 147-159, 1951.
37. Moldofsky, H., and Chester, W. J. Pain and Mood Patterns in Patients with Rheumatoid Arthritis: A Prospective Study. *Psychosom. Med.* 3:309-318, 1970.
38. Bahnson, C. B., and Wardwell, W. I. Parent Constellation and Psychosexual Identification in Male Patients with Myocardial Infarction. *Psychol. Rep.* 10:831-852, 1962.
39. Bahnson, C. B., and Wardwell, W. I. Personality Factors Predisposing to Myocardial Infarction. In *Psychosomatic Medicine, Proceedings of the First International Conference on the Academy of Psychosomatic Medicine*. Excerpta Medica Foundation, 249-257, 1966.
40. Wardwell, W. I., Bahnson, C. B., and Caron, H. S. Social and Psychological Factors in Coronary Heart Disease. *J. Health Hum. Behav.* 4:154-165, 1963.
41. Weiss, E. *Emotional Factors in Cardiovascular Disease*. Charles C Thomas, Springfield, Illinois, 1951.
42. Rosenman, R. H., and Friedman, M., et al. A Predictive

- Study of Coronary Heart Disease: The Western Collaborative Group Study. *J. A. M. A.* 189:15–22, 1964.
43. Rosenman, R. H., and Friedman, M., et al. Coronary Heart Disease in the Western Collaborative Group Study: A Follow-up Experience of 4-1/2 Yrs. *J. Chron. Dis.* 23:173–190, 1970.
 44. Zyzanski, S. J., and Jenkins, C. D. Basic Dimensions within the Coronary-prone Behavior Pattern. *J. Chron. Dis.* 22:781–795, 1970.
 45. Jenkins, C. D. Psychologic and Social Precursors of Coronary Heart Disease. *N. Engl. J. Med.* 284:244–255 and 307–317, 1971.
 46. Kissen, D. M. Psychosocial Factors, Personality and Lung Cancer in Men Aged 55–64. *Br. J. Med. Psychol.* 40:29–43, 1967.
 47. Kissen, D. M., Brown, R., and Kissen, M. A Further Report on Personality and Psychosocial Factors in Lung Cancer. *Ann. N. Y. Acad. Sci.* 164:535–545, 1969.
 48. Greene, W. A. Psychological Factors and Reticuloendothelial Disease. I. Preliminary Observations of a Group of Males with Lymphomas and Leukemias. *Psychosom. Med.* 16:220–230, 1954.
 49. Greene, W., Young, L. E., and Swisher, S. N. Psychological Factors and Reticuloendothelial Disease. 2. Observations on a Group of Women with Lymphomas and Leukemias. *Psychosom. Med.* 18:284–303, 1956.
 50. Bahnson, M. B., and Bahnson, C. B. Ego Defenses in Cancer Patients. *Ann. N. Y. Acad. Sci.* 164:546–559, 1969.
 51. Katz, J., et al. Psychoendocrine Aspects of Cancer of the Breast. *Psychosom. Med.* 32:1–18, 1970.

An Epidemiological Perspective of Psychosocial Factors in Disease Etiology

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Introduction

Throughout history there has been a conviction in medicine that certain environmental factors are important in the etiology of disease. The specific factors deemed worthy of study, however, have varied considerably over time from the “airs waters places” of Hippocratic times to the microorganisms and microchemicals of today. Quite clearly, the factors selected for study (from an almost infinite number that could be selected) are heavily dependent upon the existing theories of the nature of disease and its causes and the existing technology. Comparatively recent findings tend to suggest that we need to modify some of these existing theories to allow for the possibility that one of the more important, and hitherto unconsidered, aspects of the environment for man (from a disease etiology point of view) may be the presence of other members of the same species.

Animal Overcrowding

Paradoxically, some of the more convincing evidence supporting this point of view comes from animal studies. To a large extent, these have been concerned with variations in the size of the group in which the animals interact and in situations which lead to confusion over territorial control. A number of investigators have shown,

for example, that as the number of animals housed together increases, with all other factors such as genetic stock, diet, temperature, and sanitation kept constant, maternal and infant mortality rates rise, the incidence of arteriosclerosis increases, resistance to a wide variety of insults, including drugs, microorganisms, and X-rays decreases, and there is an increased susceptibility to various types of neoplasia.³ Lack of territorial control has been shown to lead to the development of marked and persistent hypertension in mice, to increased maternal and infant mortality rates, and to reduced resistance to bacterial infections and decreased longevity.^{1,4}

In addition to demonstrating the health effects of variations of the social milieu, further animal studies have provided clues to the processes through which they may be produced. Changes in group membership and the quality of group relationships have been shown to be accompanied by neuroendocrine changes, particularly, but not exclusively, by changes in the pituitary and adrenal-cortical systems.^{1,5,16} The changes in some of these hormones, such as the 17-hydroxycorticosteroids and the catecholamines, especially if prolonged, can, in turn, markedly alter the homeostatic mechanisms of the body and the responses to a wide variety of stimuli. The evidence, then, from a series of studies seems to be sound methodologically and reasonable from a biological point of view.

Relation of Human Environment to Health

Convincing as this animal work appears to be, the relevance of these findings to human health, however, is as

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