

# CONTRIBUTIONS OF BEHAVIORAL SCIENCES TO HEALTH CARE

## An Historical Perspective

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Prior to the twentieth century the natural and the biological sciences were concerned, respectively, with the understanding of man's environment and the structure and internal functioning of the body. The understanding of men's behavior was not a scientific preoccupation, being rather the province of the poet, politician, philosopher and theologian. The extensive development of behavioral science is a contemporary phenomenon that, the recency notwithstanding, has had many ethical and practical consequences, including significant contributions to health care. A comprehensive historical appraisal of these seems timely.

The term "behavioral science" is frequently used without precision in medical circles. Whereas cultural anthropology, social psychology and sociology provide the backbone, they do not constitute the whole body of behavioral sciences, according to the medical historian, George Rosen.<sup>1</sup> This attitude is shared by the author of the introductory editorial in the first issue of the journal *Behavioral Science*.<sup>2</sup> Its appearance in 1956 represented a response not only to an increased concern about human behavior but also to an increased need for interdisciplinary

exchange. This editorial lists among the natural science approaches to behavior the following: mathematical biology, biochemistry, economics, genetics, history, medicine, politics, psychology and philosophy, in addition to the obviously relevant triad of social sciences. It is not generally appreciated that specialists from all these fields may alternate from immersion in the purely esoteric aspects of their studies to work bearing more broadly on human behavior. This makes them behavioral scientists to a greater or lesser degree. The behavioral sciences, then, are related to those activities of all scholars that throw scientific light on human behavior. To this definition, it is necessary to add a rider. The term behavioral scientist is often used as a shorthand to mean social scientist.

Although the early contributions of the social sciences concerned health care only peripherally, as pointed out in 1963 by Strauss and Clausen,<sup>3</sup> today social scientists are active in many areas that once were exclusively medical. Within recent years anthropology has become much more closely affiliated with psychiatry to the profit of both, as Brodsky<sup>4</sup> and Wittkower and Dubreuil<sup>5</sup> show. One benefit of studies by anthropologists, for example, has been to provide data on emotional and mental disturbances in different cultures.<sup>1</sup> Sociology's interest in social problems and environment has helped turn considerations of health care from the individual alone to adaptive processes in the environment. Medical sociology is now a large and thoroughly studied area as books, such as that by Mechanic, show.<sup>6</sup>

Psychology was the first scientific discipline, in the modern experimental sense, to focus on man's behavior. When, in the late nineteenth century, Wundt led the movement that abandoned introspection as a means of learning about mental processes, psychology turned to the observation of behavior under varying conditions. From a focus on specific mental functions, such as perception and learning, psychological interest has extended to the study of the complex interactions among neuro-endocrine, mental, behavioral and social processes. In this it has brought academic behavioral science into so close a relation

with psychiatry and physiology that their respective "territories" now overlap considerably.

In addition, a gradually expanding involvement may be seen in behavioral science activity from both the basic science fields, such as biochemistry and physiology, and the clinical disciplines such as medicine, obstetrics and gynecology and surgery. Psychiatrists are committed because the study and assessment of behavior is their major concern. They make fundamental behavioral observations and studies that categorize them as sociomedical specialists, if not as behavioral scientists in the strict sense.

Let us reflect for a moment on prescientific attitudes and systems of thought endeavoring to find meaning in human behavior. They have been mystical, religious, philosophical and, in the eighteenth century, rational. In the nineteenth century, Romanticism flourished to unite with reason in a common path that, by midcentury, showed its concern with human ills in a moral stance. This unhappily faded before the scientific successes of the latter part of that century and the early half of the present century, which led to a mechanistic approach to illness.

Anyone who was a medical undergraduate in the 1920's, as was the senior author, was innocent of anything resembling the behavioral sciences. Awareness of psychology was minimal. Those lucky enough to be exposed to Bernard Hart's *PSYCHOLOGY OF INSANITY*<sup>7</sup> had a door opened to the dynamics of personality that, unfortunately, was closed too soon by the exigencies of hundreds of hours of anatomy. Sociology and anthropology were absent from curriculum and vocabulary.

Interns in the late 1920's and 1930's found a milieu of therapeutic optimism on the wards. Insulin and liver were available as specific therapies and the sulfa drugs came along in the mid 1930's. Much effort was bent to improve diagnosis of illness, but woe to the student who cited more than a single cause. In contrast to the increasing pathophysiologic sophistication, functional disorders were still treated physically or regarded askance.

Peptic ulcer was authoritatively regarded as the result of an infection. Comments on obscure pain or drug addiction implied moral deficits—yellow streaks or malingering, and patients' feelings were sometimes shamefully disregarded. Although some physicians were strong exponents of treating the patient as a person, this was dependent on the individual physician's bent and was not policy. Sex, in terms of human relations, was not mentioned while doctor-patient interaction was unexplored. In the outpatient departments an inch-thick file called for cursory consideration, grumbling and the prescription of phenobarbital. Nevertheless, if tempted to take a pejorative view of treatment in those times, one should remember that doctors were in essence locked in by the limitations of the prevalent physiochemical views. It is a rare mind that can transcend the limitations of his own cultural bonds.

However, a new wind was blowing though most physicians were sublimely unconscious of it. This emanated from the new psychological studies of Freud, Jung and Janet in Europe and Meyer on this continent. Their importance for psychiatry was well adumbrated in the introduction to Henderson's and Gillespie's textbook in 1927.<sup>8</sup> The authors wished to "present psychiatry as a living subject, with important relations not only to general medicine, but to the social problems of every day life." However, this was not heralded widely any more than was their testament that "psychiatry is within easy reach of the general practitioner with all it implies in the way of recognition, prevention and treatment." These wise words, unfortunately, were not heard by students exposed to only one or two lectures in psychiatry. No psychiatric service existed in general hospitals. The few excellent social workers were quite insufficient in number for the volume of demands.

In the 1930's, some internists brought a broad and sympathetic psychologic perspective to bear on their clinical studies, e.g., of anorexia nervosa.<sup>9</sup> In such instances, a supportive and inspired behavioral approach to the understanding of the difficult cases was employed with what might now be called milieu

therapy. Because it was not systematized or expressed in behavioral terms, much of the virtue of what they did escaped both their colleagues and their readers. Intuitive brilliance, unless substantiated and supported by objective evidence, is soon dissipated like any other fragrance. On the whole, medical preoccupations remained predominantly at the metabolic and chemical level. Personality factors in patients were considered important by some younger neurologists, but they had not had time to develop many organized criteria for the inclusion of these factors as determinants of illness.

Meanwhile, hopeful developments of behavioral significance were occurring elsewhere. A new and more dynamic physiology was being established under the leadership of W. B. Cannon at Harvard. His studies of the influence of emotions and autonomic nervous system activity on such functions as gastrointestinal motility came to have profound significance for behavioral science. His enunciation of the concept of homeostasis in 1932<sup>10</sup> constitutes a real turning point in the understanding of the interrelatedness of emotions, appetites and environment. In the mid-1930's, the ideas of physiologic stress and adaptation in response to environmental insults began to emerge from Selye's studies.<sup>11</sup> At this time, too, a respected figure on the American medical scene, Stanley Cobb of Boston, published *A PREFACE TO NERVOUS DISEASE*<sup>12</sup> to be expanded later with a new title and new emphasis as *FOUNDATIONS OF NEUROPSYCHIATRY*. It dealt with psychologic factors in disease and the relevance of neurology for understanding people.

In retrospect, this book was an omen of a fresh wind that would soon blow on previously static fields and bring a climate of opinion favorable to better understanding of behavior. Concurrently, the 1930's brought stirrings of social studies related to medicine. In 1932, Sapir spelled out psychiatry's difficulty in establishing a new self-image in North America; that is, in retaining and consolidating its biologic legacy even as its scope broadened beyond the traditional focus on the intrapersonal determinants of psychopathology.<sup>13</sup> An insightful group of

papers by psychiatrists and social scientists published in the *American Journal of Sociology* in 1937<sup>14</sup> laid a substantial basis for an optimistic future of interdisciplinary collaboration. This group included papers by such illustrious persons as Adler, Alexander, Mayo, Schilder, Sullivan and Sapir. Any sustained impact of academic sociology was, of course, curtailed by war from 1939 to 1945.

Three empirical developments in the field of clinical psychiatry also bear mention as they created an atmosphere of hope where only custodial resignation had reigned: insulin treatment of schizophrenia, shock therapy and prefrontal leucotomy. These approaches favored the development of real and vigorous concern with patient care and cultivated a renewed behavioral humanism.

World War II gave a fresh impetus to the study of emotional ills, particularly in breakdown resulting from battle conditions as described in reports such as Grinker's and Spiegel's *MEN UNDER STRESS*.<sup>15</sup> Anxiety and fear were recognized, accepted and treated as normal responses to unusual situations. Wartime casualties, both in battle and on the home front, were seen in the light of the more dynamic psychologies and with an absence of condemning moralism. Indeed, by 1945, a considerable shaping of psychiatry by war had occurred in the direction of a renewed humanism, as described by the late John Rees.<sup>16</sup>

This was a real cultural change that was manifested in new points of view in addition to patient care. The reasons for such a cultural change deserve more extended treatment than is possible here, for culture is a vast concept with a literature of appropriate proportions. It has been described briefly by Paul as "a group's design for living, a shared set of socially transmitted assumptions about the nature of the physical and social world, the goals of life and the appropriate means of achieving them."<sup>17</sup> In North American psychiatry, and to a lesser extent in medicine as well, this culture change involved the idea that human illness behavior has not only immediate pathologic somatic causes but also complex psychological and socioenviron-

mental determinants. It had been germinating for a long time and had multiple roots. Though owing much to Freudian theories, other vastly important social changes were in process, reflected in the concern of political scientists such as Sir William Beveridge (1879–1963) with social and labor problems, and shifts in opinions and practices in literature, art and the other humanities.

The really effective contribution of the behavioral sciences to health care dates from World War II. One manifestation of this was the psychosomatic movement, devoted to the study of psychosocial as well as physical factors in illness.<sup>18</sup> Interdisciplinary projects became popular as many students of behavior, such as physiologists, psychologists, internists and psychoanalysts, saw the need to collaborate. The theories and labels “comprehensive” and “holistic” in medicine expressed the same trend.

On the more academic side, symposia set up by various foundations favored an exchange between different fields. The Russell Sage Foundation instituted a program in 1949 for the application of social science research in medicine. This led to studies by sociologists in hospital settings, which added a new dimension to the understanding of these complex social organizations.<sup>19</sup> The Josiah Macy Foundation seized upon the intrepid notions of cybernetics following Wiener’s book in 1948<sup>20</sup> and organized conferences around this topic.<sup>21</sup> These meetings of scientists from diverse fields with interests in human behavior served to crystallize ideas that today form the material of behavioral science. Out of such gatherings and activities emerged the super-intellectual meeting ground for thinkers, namely, the Center for Advanced Study in the Behavioral Sciences at Palo Alto, established in 1954 and described in some detail recently.<sup>22</sup> There, supported by the Ford Foundation, a limited number of accomplished scientists convene each year to exchange ideas, cogitate and write in an informal and favorable environment.

The late 1940’s formed some sort of watershed, not only for the emergence of behavioral science thinging as outlined above, but also for basic scientific investigation in this field. The sci-

entific methods of biochemistry and physiology, which had earlier solved riddles of the material world, began to find application to the study of the effects of emotion on behavior. Such studies were possible because of further development of electronic apparatus of great sensitivity. Thus, in the late 1940's and 1950's, biologic studies expanded into fields of relevance to human mental aberrations and the basic scientists became also behavioral scientists.<sup>23</sup>

Ordinary fluctuations in affect as well as anxiety, depression and various states of mental perturbation began to be studied by psychiatrists using a combination of biologic, psychologic and psychoanalytic principles. Such men as Bunney, Fox, Gottschalk, Grinker, Knapp, MacLean, Mirsky, Sachar, Wolff and Wold added significant observations and formulations. Concurrently, a new interest in and new techniques for studying primate behavior had developed under the leadership of Hebb, Harlow and others.

In the social sciences ideas had matured too so that its representatives could study the healing professions themselves. Oswald Hall in 1948,<sup>24</sup> then O. W. Anderson and Leo W. Simmons shortly after, were among the first to get involved in medical institutions. Talcott Parsons, in 1951, was the first to describe the practice of medicine as a major system of behavior.<sup>25</sup> Thus occurred an explosion of publications of relevance to social science in medicine similar to that in the biological field. An analysis of the 655 bibliographic items in the classical summary by Simmons and Wolff in 1954<sup>19</sup> shows this impressive increase.

The 1950's witnessed further dramatic growth of many areas pertaining to behavioral sciences. Psychosomatic medicine, especially in North America, began to permeate medical thinking. Sociologic studies helped to improve the climate of respect for human beings in mental distress with correspondingly great changes in attitude and custom in psychiatric care. Mental hospital wards were unlocked. Psychiatric units were established in general hospitals and a therapeutic attitude of hope prevailed. The practice of pediatrics showed the beneficial impact of the



work of Gesell, Piaget and Anna Freud. Then, the introduction of phenothiazine therapy helped change admission and discharge policies in mental hospitals and made it possible to treat behavioral problems outside institutions by psychologic as well as pharmacologic means.

In the opposite direction was psychiatry's renewal of interest in medical matters, which had its roots in the physical therapies of the 1930's but received its critical impetus in the 1950's from the tranquilizers and later the antidepressants. Psychiatrists were reminded that emotional processes have physiologic correlates and mental illnesses at times have a physiologic basis. This point of view was helped by the fortuitous occurrence in this decade of cortisone psychoses in which the delicate interplay was demonstrated between endocrine and psychologic factors.<sup>26</sup>

The same interplay is evident in the evolution of the placebo theory, a by-product of the development of methods for estimating the benefit of treatment, which emerged in the 1950's. "Since most such studies involve evaluating behavior as well as physiologic changes it became clear that, just as the sociologists were insisting, there is illness behavior as well as illness. Many symptoms can be learned and then maintained by patients, deliberately or unwittingly, after the mechanisms that gave rise to them in the first phase have been put right. The mechanisms involved can operate at a level of neural functioning that is outside the scope of consciousness. At times, therefore, the pejorative term "malingerer" is an expression of the clinician's frustration in failing to treat effectively rather than a useful explanatory notion of behavior.

Concurrently, interest developed in the doctor-patient relation and the teaching of the doctors' use of his personality as a therapeutic tool in clinical medicine as in psychiatry by leaders such as Balint.<sup>28</sup>

How much real change in health care has arisen from the application of the behavioral sciences? A transformation has taken place in mental hospitals and in some general hospitals with psychiatric units. Some improvement has been noted in

general public attitudes to mental illness on a cultural level, in part the result of the psychologizing prevailing in press and literature. Psychiatrists performing a consultation service on the wards of general hospitals have an increasingly effective and beneficial influence.<sup>29-31</sup>

However, medical practice today is influenced by contrary factors such as the massive growth of electronic methods of analysis and new physical methods. As Parsons points out,<sup>32</sup> the resulting dependence on laboratories and technicians in general hospitals makes the old pattern of the individual doctor vis-à-vis patient impossible to maintain. A contemporary resurgence of unsympathetic scientism may prevent the continuing appreciation of the insights of behavioral scientists. Advances in physiochemical medicine and cybernetics have increased specialization and contributed to reorganization of health services, which tends to produce dehumanized, compartmentalized medical care.<sup>33</sup>

One of the most important safeguards against such a process today is the psychosomatic view of the patient. The notion that physical illness is caused only by peripheral physical pathology has been abandoned to the extent that it has largely because of behavioral science contributions. Two examples are the complications of open-heart surgery<sup>34, 35</sup> and renal transplantation and hemodialysis.<sup>36, 37</sup> In both instances psychologic contributions have become so apparent that they demand and are getting increasing involvement by psychiatric consultation services and a new awareness of attending physicians.

These new problems are examples of numerous bona fide psychosomatic concerns peculiar to a medical setting; others have a more sociologically defined orientation. They have been discussed recently by Cassel,<sup>38</sup> Lipowski<sup>39</sup> and Schwab<sup>40</sup> in particular. These authors point out the need to look at illness in relation to sociocultural processes, something that already had been cogently and perceptively written about by Halliday<sup>41</sup> some 20 years ago. When such an approach is applied to the hospital setting its implications and consequences are vast. A

great proportion of individuals attending medical and other clinics on a chronic basis are suffering from psychosocial in addition to physicochemical illness. There is a gross overconsumption of medical services by such patients. By the use of social workers and psychiatrists in clinics patient visits and expensive laboratory tests can be diminished. Social disintegration, as Leighton<sup>42</sup> indicates, may be the crucial factor related to an increased frequency of illness. The idea that psychosocial as well as physicochemical processes must be considered has had repercussions upon all aspects of the delivery of health care—from architecture of hospitals to concern with human and non-human environment, to considering the treatment of the families of patients, the growth of social work departments in hospitals, home visits by nurses and physicians and so on. This idea has also hastened the transition from large institutions to smaller community-based health facilities.

A paradox of the nineteenth century and early twentieth century medicine has been that, though man's body was considered to be a machine dependent only on physicochemical processes, man's behavior, on the contrary, has been considered to be entirely the result of "will:" voluntary, conscious and controllable. Patients were therefore held morally responsible for their actions. If, for example, a juvenile diabetic failed to strictly follow his diet and returned repeatedly to hospital in coma, it meant that the patient was "unreliable, uncooperative." Increasingly, internists are appreciating unconscious mental processes in such cases and are beginning to pay attention to underlying depression, suicidal urges and cries for help. The notion that goal-directed activity is not necessarily conscious has sprung both from psychoanalytic contributions and the more recent and very impressive contributions of the ethologists. They have shown that behavior, as well as the structure and function of the mammalian body, has biologic roots.<sup>43</sup> Man is therefore not totally in control of, or responsible for, all his actions. This is now accepted in law and its implications extend to medical practice. Implicit in the above, and a most important

contribution of behavioral sciences, is acceptance of the multi-causality of illness with continuous interdependence of the factors involved.

Two other developments to which the behavioral sciences have contributed heavily are of importance to health care. One is the notion of the therapeutic milieu. The assumption is made that all human and nonhuman elements that compose the setting in which treatment is given may, to varying degrees, have positive or negative therapeutic influence. The number of positive influences can be multiplied and the negative decreased to the extent that they can be detected, controlled or compensated for. Inasmuch as the treatment team—all the paramedical personnel as well as the physicians—together with the patients are usually the most important of these influences, a therapeutic milieu can be facilitated by improving communication in the system, and identifying unexpressed emotional reactions to events in the milieu, thereby permitting appropriate corrective measures to be taken. The attempts to deliberately harness positive factors in the treatment setting and minimize antitherapeutic ones have been best developed in psychiatric milieu therapy, as practiced under the name “therapeutic community” by Maxwell Jones<sup>44</sup> and others. This also has great potential for community health care programs, for mental hospitals and for ambulatory centers now proliferating in general hospitals.

The other important recent contribution is behavior therapy. This is a development from outside classical medicine, chiefly from academic psychology, with a clear lineage from Pavlo through Watson to Skinner, Eysenck and Wolpe. Since the work of Neal Miller<sup>45</sup> it will probably have increasing application to medical problems in addition to its present importance in psychiatry. Behavior therapy will probably find a more ready acceptance in general medical circles than hypnosis or psychotherapy did because, unlike these, behavior therapy does not force physicians to be aware of their own unconscious feelings or motives. Nevertheless, it will force them to reexamine the

role of the central nervous system in the pathogenesis of illnesses in which this is presently ignored.

Many of these changes in point of view are difficult for older physicians and surgeons to assimilate. Students seem to have less trouble. Our experience at McGill with a behavior, growth and development course for first-year medical students has been encouraging.<sup>46</sup> This covers some 100 hours of lectures and demonstrations in which a holistic approach to patients is stressed. Student participation is vigorous and favorable.

It is to be hoped that pressure from such students will encourage the assumption of attitudes in medicine that psychiatry has been encouraging for years. Borrowed partly from behavioral sciences, they are part of the new culture that Slater has recently discussed in a provocative way.<sup>47</sup>

It is likely that essential changes in health care will be demanded soon by some of the new generation of physicians and students acting in concert with socialistically minded civil servants and politicians. Furthermore, techniques for effecting social change have altered and adherents to conservative positions have good reason to be disturbed. There may be a parallel to that which Kuhn in his monograph on the scientific revolution says occurs in science.<sup>48</sup> The process involves periods of cumulative development: refinements and clarification of the paradigm, new insight and then revolution. Revolutions occur when enough influential people become dissatisfied with the widely shared point of view or paradigm. The view is condemned, purged and put away dramatically. This may result in the disappearance of the baby with the bathwater but, in science at least, such a revolutionary swing of the pendulum of assumptions about what is "right" seems to be necessary to counteract comfortable stability—so resistant to change, so deaf to plausible new views that it mummifies itself with its pompous certainty.

The contributions of the behavioral sciences to health care have been twofold: first, to act as sensitive indicators of the winds of cultural change and, second, to define new parameters

of living that bear on health care as one aspect of culture. No one can deny the existence of the transition taking place in our culture. Styles in hair and clothes are but superficial evidence of profound changes in values. Individualism has diminished. By contrast, cooperative teamwork is encouraged. There is a departure from reliance on authority and a debunking of status. There is a demand for relevance to social issues in all problems approached by science and a move away from the culture of scarcity. These changes involve behavioral science, which probably will put man's efforts to better use than the development of 67 models of sleek cars next year. The permeability of barriers between academic disciplines must increase so that the empirical world of clinical scholars and scientists will have changed as they mix. This will lead to patient-oriented functional objectives in hospitals with the patient as the focal point. Then, the vying for status by scoring points in subtlety of diagnosis or oneupmanship in argument will subside. The contributions of behavioral science to medicine will become more conspicuous as the gains made are recognized.

In closing, attention may well be directed to the philosopher Abraham Kaplan, who has this to say about behavioral science: "*What I have tried to emphasize is a catholicity of outlook, which has no need for the tactics of defensive incorporation and exclusion . . . A new generation of behavioral scientists has sprung up . . . and I believe that the future is theirs.*"<sup>49</sup>

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