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Yale Conference on Behavioral Medicine: A Proposed Definition and Statement of Goals[1]

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The Yale Conference on Behavioral Medicine brought a diverse group of behavioral and biomedical scientists together for the purpose of arriving at an interdisciplinary yet consensual definition, statement of goals, and set of recommendations regarding the emerging field of behavioral medicine. It was proposed that behavioral medicine be defined as "the field concerned with the development of behavioral science knowledge and techniques relevant to the understanding of physical health and illness and the application of this knowledge and techniques to prevention, diagnosis, treatment, and rehabilitation. Psychosis, neurosis, and substance abuse are included only insofar as they contribute to physical disorders as an end point." The rationale behind this definition and proposals for future developments in the field are discussed.

KEY WORDS: Yale Conference; behavioral medicine; interdisciplinary; integration.

[1] Conference held at Yale University on February 4-6, 1977. Supported by the Department of Psychology, Yale University, the Department of Psychiatry, Yale University School of Medicine, and the National Heart, Lung, and Blood Institute, National Institutes of Health. The opinions expressed at the conference do not necessarily reflect those of Yale University or the National Institutes of Health.

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INTRODUCTION AND OVERVIEWS

In the fall of 1976, the authors initiated plans for a working conference at Yale University to help stimulate and coordinate efforts emanating from various quarters to formally establish the field of "behavioral medicine." It had become clear to us that despite the growing awareness in funding agencies as well as the general public regarding the role of behavioral factors in the etiology, treatment, and prevention of disease, the lack of a commonly shared definition concerning the scope and subject matter of this area undoubtedly was delaying its recognition by many key sources of research funding. For example, prior to the time of the conference, the National Institutes of Health had no formal procedure for comprehensively evaluating the increased number of grant applications being submitted on the role of behavioral factors in health and illness. Because there was no explicit definition of the areas encompassed by this research, efforts at consolidation of these investigations were being hampered.[5]

It was also becoming clear that there was an increased need for interdisciplinary communications of theory, research, and applications in these areas. We were aware of the growing interest in some quarters to create new forms of publications and scientific meetings to help advance the field as well as to establish new laboratories, divisions, and centers within institutions with the goal of fostering this orientation.

The Yale Conference on Behavioral Medicine brought together a diverse group of behavioral and biomedical scientists to devise an interdisciplinary yet consensual definition, statement of goals, and set of recommendations for the emerging field of behavioral medicine. In seeking to establish this field, it was recognized that the potential for significant advances in knowledge in this area lay in the *integration* of behavioral and biomedical expertise in the search for solutions to problems of health and illness. Although parallel research had been conducted in each area for many years, it was believed that the concept of "the whole being greater than the sum of its parts" was relevant: that explorations which integrate the biomedical and behavioral hold opportunity for developing different and more useful scientific knowledge than separate studies can.

Further, the differentiation of this area from one of its closest forebears, psychosomatic medicine, involves *direct* interaction of biomedical and behavioral science, with psychiatry as a coequal participant rather than a mediator as before. This reflects the maturing of the behavioral sciences in their development of research strategies and methodologies which directly affect health and health care.

[5] Since the conference, the National Institutes of Health has established an *ad hoc* study section on behavioral medicine using the guidelines developed at the Yale Conference on Behavioral Medicine.

It was our belief that theory and research linking the behavioral sciences to medicine had advanced sufficiently to warrant clarification of their terminology and scope. Toward this end, a relatively small yet representative group of behavioral and biomedical scientists was invited to Yale.

DESIGN OF THE CONFERENCE

Listed in Table I is the group of biomedical and behavioral scientists invited to Yale under the cosponsorship of the Yale University Departments of Psy-

Table I. List of Invited Participants[a]

W. Stewart Agras, M.D.
Stanford University School of Medicine

John Basmajian, M.D.*
Emory University School of Medicine

Herbert Benson, M.D.
Beth Israel Hospital

M. Margaret Clark, Ph.D.
University of California at San Francisco

Wendell R. Garner, Ph.D.*
Yale University

W. Doyle Gentry, Ph.D.*
Duke University Medical School

David Glass, Ph.D.*
City University of New York

David Hamburg, M.D.
Institute of Medicine

J. Alan Herd, M.D.*
Harvard Medical School

Irving Janis, Ph.D.*
Yale University

C. David Jenkins, Ph.D.
Boston University

Mirian Kelty, Ph.D.*
National Commission for the Protection of Human Subjects

Richard S. Lazarus, Ph.D.
University of California at Berkeley

Hoyle Leigh, M.D.*
Yale University School of Medicine

Joseph Matarazzo, Ph.D.*
University of Oregon Medical School

David Mechanic, Ph.D.
University of Wisconsin

Neal Miller, Ph.D.*
Rockefeller University

Adrian M. Ostfeld, M.D.*
Yale University

Evan Pattishall, Jr., Ph.D., M.D.*
The Pennsylvania State Univeristy College of Medicine

Richard H. Rahe, M.D.
Naval Health Research Center

Morton Reiser, M.D.*
Yale University School of Medicine

Judith Rodin, Ph.D.*
Yale University

Gary E. Schwartz, Ph.D.*
Yale University

Norman Scotch, Ph.D.
Boston University Medical School

Alvin P. Shapiro, M.D.
University of Pittsburgh School of Medicine

David Shapiro, Ph.D.
University of California at Los Angeles

Albert J. Stunkard, M.D.*
University of Pennsylvania Medical School

Richard Surwit, Ph.D.
Harvard Medical School

Hussain Tuma, Ph.D.*
National Institute of Mental Health

Stephen M. Weiss, Ph.D.*
National Heart, Lung, and Blood Institute

Louis Wienckowski, Ph.D.*
National Institute of Mental Health

Redford Williams, Jr., M.D.*
Duke University Medical School

[a]Names with asterisks indicate those who were able to attend the conference. Written working statements were obtained from a number of invited participants who were not able to attend the meeting.

chology and Psychiatry and the National Heart, Lung, and Blood Institute of the National Institutes of Health.

After the invitations to participate had been sent, all invitees received a second letter containing a series of questions relating to "behavioral medicine" with a request for "working statements" in response to these questions. All invitees were requested to submit such responses whether or not they could actually attend the conference, to provide relevant and balanced discipline representation.

The actual instructions and questions requested of the invited participants were as follows:

> In the process of preparing the final report, we would like to insure that all views be distributed and evaluated. Unlike many conferences, which discuss science in an "unscientific" manner, we would like to assess your opinions in a more organized and comprehensive fashion. Toward this end, we are requesting that each invited participant prepare a brief working statement of his views regarding:
>
> (1) a description and/or definition of behavioral medicine (from a few sentences to a few paragraphs, whichever you feel is necessary);
> (2) a listing of specific subareas that
> (a) should be included
> (b) are of questionable relevance, and
> (c) should be excluded,
> from the heading of behavioral medicine;
> (3) a description of each subarea (a few sentences per subarea is sufficient);
> (4) specific conceptual, organizational, research and/or training issues that you feel should be addressed in behavioral medicine in the years to come.
>
> We want these statements to be working documents in the real sense of the term. Hopefully, they will change in some ways for each of us as a result of the conference. Our plan is to collate *all* of the responses, removing names so that they can be utilized by each of the participants. The data will provide the foundation for everyone to become aware of similarities and differences in views among the invited participants, without having to personally defend one's working statements since they will be distributed anonymously. It also will insure that everyone's views will be expressed, and included in the formal analyses made of the responses.

The conference format focused on sets of four working groups, each taking primary responsibility for reviewing different portions of the written "working statements" sent in earlier by the participants.[6]

The tasks of the working groups were to carefully review all of the statements for which they had primary responsibility for the purpose of (1) developing a brief definition of "behavioral medicine" and (2) preparing a list of subareas to be included under the heading of behavioral medicine.

[6] Although these statements were unsigned, the conference coordinators, through coding, arranged the distribution of statements so that no member reviewed his or her own statement as part of his or her group's *primary* assignment. *All* statements, however, were available to *all* groups so that ideas could, at each group's option, be incorporated from *any* statement.

Each of the eight (4 X 2) working groups was balanced by discipline and leadership between biomedical and behavioral scientists (as was the origin of the working statements considered by each group).

All original working statements were presented *unsigned* so that each participant would not feel constrained to defend a given position as the conference progressed. These statements illustrate the similarities and differences in opinion expressed *before* the conference began. All major conclusions described in this article represent the composite thinking of the plenary sessions following each set of working group deliberations.[7]

RESULTS

The four major conclusions reached at the conference, including a brief description of how these conclusions were drawn, are outlined below.

Conclusion 1

It is possible to arrive at a general definition of behavioral medicine that is acceptable to a broad spectrum of researchers in the behavioral and biomedical sciences. The definition reads as follows:

> Behavioral medicine is the field concerned with the *development* of *behavioral science* knowledge and techniques relevant to the understanding of *physical health* and *illness* and the *application* of this knowledge and these techniques to prevention, diagnosis, treatment and rehabilitation. Psychosis, neurosis, and substance abuse are included only insofar as they contribute to physical disorders as an end point.

In arriving at this definition, the group engaged in a lively discussion regarding the pros and cons of (1) defining behavioral medicine as a basic science, a science, a discipline, an approach, or a field (the last was deemed most appropriate since it emphasized the interdisciplinary nature of the area), (2) distinguishing between "development in the behavioral sciences of knowledge and techniques" vs. "development of behavioral science knowledge and techniques" (the latter was chosen because it has the advantage of not excluding persons lacking formal credentials in the behavioral sciences from working in the field of behavioral medicine), (3) emphasizing both health and illness, rather than stressing disease, and (4) needing to clarify when traditional psychiatric cate-

[7] The working statements were published as part of the appendix to the *Proceedings of the Yale Conference on Behavioral Medicine,* February 4-6, 1977, New Haven, Connecticut. G. E. Schwartz and S. M. Weiss (eds.), DHEW Publication No. NIH 78-1424.

gories not specifically concerned with physical health and disease are appropriate to the field of behavioral medicine.[8]

The group deliberately refrained from defining "behavioral science knowledge and techniques" explicitly, since it was recognized that the definition of behavioral science may change in the future. Also, considerable discussion was directed toward proposing a definition of behavioral medicine that was neither too narrow nor too broad. There was general agreement that the field of behavioral medicine should not be defined solely in terms of a specific discipline (e.g., psychology) or orientation (e.g., behavior modification) in the behavioral sciences or in terms of specific discipline (e.g., internal medicine) or orientation (e.g., homestasis) in the biomedical sciences. On the other hand, it was agreed that specific areas and examples need to be provided in supplementary text to ensure that the definition of behavioral medicine is understood.

A point that was repeatedly voiced throughout the conference was the need for the field of behavioral medicine to emphasize the *development* of behavioral science knowledge and techniques rather than the uncritical application of current knowledge to clinical practice. To paraphrase a comment of one of the participants, Dr. Neal Miller, prevailing sentiment voiced at the conference was one of "being bold in what you try, but cautious in what you claim."

Conclusion 2

It is possible to specify the content and subareas composing behavioral medicine. The following amplifies the proposed definition of behavioral medicine:

> Behavioral medicine is a field concerned with research into the basic mechanisms whereby behavioral phenomena influence the epidemiology, etiology, pathogenesis, prevention, diagnosis, treatment, and rehabilitation of physical disorders. The disciplines contributing to the study of these phenomena include psychology, sociology, anthropology, education, epidemiology, biostatistics, and psychiatry. These disciplines must be coupled with the biological and medical sciences relevant to understanding the disease processes under study. Behavioral medicine is also concerned with the epidemiology, etiology, pathogenesis, diagnosis, prevention, treatment and rehabilitation of behavioral conditions such as appetitive disorders and failure to adhere to therapeutic regimens only insofar as they influence physical health and disease as an end point.

[8] This definition was evolved to serve as a point of departure rather than as "the final word." For example, although this definition purposely excludes traditional behavioral disorders *per se* from the scope of behavioral medicine, such disorders could be construed as being relevant to a broader conception of behavioral medicine. In fact, if behavioral disorders are redefined to reflect underlying functional disorders of the central nervous system (with the brain as the end organ in question), then it would follow that psychosis, neurosis, and substance abuse *per se* could be included in the present definition. This shift in emphasis would reflect more than a change in semantics. It would reflect an important change in conceptualization, in which mental disorders would no longer be described in purely psychodynamic or behavioral terms but rather would be seen and studied from an integrated, psychobiological perspective.

Specific examples in which principles of behavioral medicine have been used in the study of physical disease can be found in disorders such as hypertension and rheumatic heart disease. Behavioral medicine research on hypertension includes epidemiology of social, ethnic and racial influences, the role of environmental stressors in the etiology and pathogenesis of high blood pressure in experimental animals and humans, biofeedback and behavior modification procedures in the treatment of hypertension, and the behavioral facilitation of adherence to antihypertensive regiments. Behavioral medicine research on rheumatic heart disease includes the role of social factors in prevalence of streptococcal infections and their sequelae, adherence to prophylactic drug therapy, and the behavioral rehabilitation of patients recovering from surgical repair of deformed heart valves. Thus, it can be seen that research in behavioral medicine relates behavioral-science knowledge and techniques to basic sciences, clinical sciences and the application of findings through clinical therapeutic trials in the prevention and treatment of physical disorders.

The group proposed that a matrix could be helpful for organizing the kinds of problems with which behavioral medicine is concerned. This matrix is illustrated in Fig. 1.

Each problem may only fill in certain cells in the matrix, and not all aspects of all problems fit well into the matrix. But the matrix is an effort to demonstrate the fundamental similarities in the structure of research in behavioral medicine to that of traditional biomedical research.

The group decided that it is possible to make a general list of problems in behavioral medicine that can be applied to any physical disorder. The following list is based on the set of lists generated at the conference.

1. Sociocultural influences on physical health and disease, including epidemiological, anthropological, and sociological studies.
2. Psychosocial factors contributing to physical health and disease, including social psychology, personality, and psychophysiological studies investigating social, behavioral, and emotional stresses and their consequences.

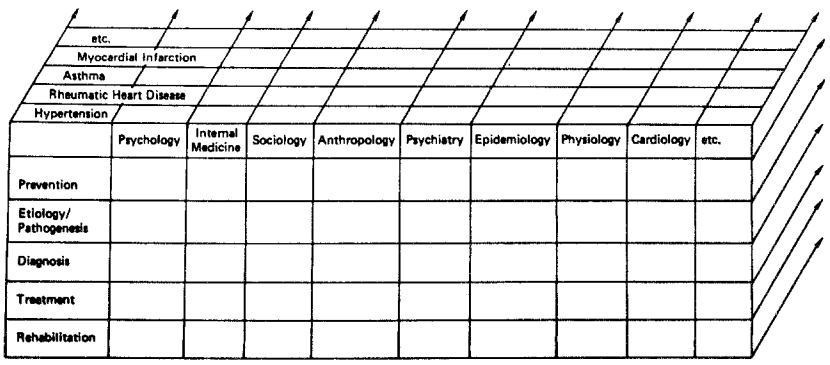

Fig. 1. Matrix of problems in behavioral medicine.

3. Health behavior, illness behavior, and sick-role behavior.
4. Cognitive determinants of physical health and disease, with special recognition of placebo factors.
5. Development of behavioral diagnostic techniques, including psychophysiological assessment procedures (e.g., in stress testing).
6. Pain and its regulation.
7. Factors contributing to adherence to medical regimens (including compliance studies) and relevant research on behavioral approaches to the control of substance abuse.
8. Behavioral contributions to the treatment and rehabilitation of physical disorders, including stress management and self-regulatory therapies such as biofeedback and relaxation, and the evaluation of different types of psychotherapy and behavior change techniques.
9. Behavioral approaches to the prevention of physical disease and the promotion of health, including interdisciplinary research derived from education, economics, and social systems theory.

Finally the group proposed that examples be offered of areas of research *excluded* from behavioral medicine. These examples are as follows:

1. Traditional mental illness (psychosis, neurosis) *per se.*
2. Substance abuse *per se.*
3. Mental retardation *per se.*
4. Social welfare problems *per se.*

Conclusion 3

A major body of scientific research now exists that can and should be brought together under the general heading of behavioral medicine. This research is currently spread over diverse behavioral and biomedical publications, often hampering interdisciplinary communication and collaboration necessary for the continued development of the field. Specialized journals such as *Psychophysiology, Biological Psychology, Biofeedback and Self-regulation, Psychosomatic Medicine,* and the *International Journal of Psychiatry in Medicine* represent parts of the field of behavioral medicine, but no one journal provides a single comprehensive forum that is widely read by both behavioral and biomedical scientists concerned with biobehavioral research.

It was agreed, therefore, that there is a need for an interdisciplinary journal that emphasizes excellence in theory and research in the broad area of behavioral medicine. The consensus of the group emphasized the need for a publication of the highest quality. As an indication of such commitment, each conference participant volunteered a specific example of his or her current (or

pending/proposed) research that he or she would be willing to have reviewed for a behavioral medicine journal of the quality envisaged by the group.[9]

Conclusion 4

The group agreed to explore the feasibility of forming a Society for Behavioral Medicine. It was emphasized that the society, like the journal, should emphasize excellence in basic research in behavioral medicine as well as controlled investigations dealing with clinical application. It was suggested that a survey be conducted to determine national interest in forming such a society. However, the mechanics for conducting such a survey were not established at the conference. It was generally agreed that although the journal could be sponsored by the society, there was no necessity in having the development of one be contingent upon the development of the other.[10]

Other issues discussed at the conference emphasized the need for workshops in such areas as biobehavioral research design as well as research training in behavioral medicine. Also, it was generally agreed that the above structures (journal, society) could serve to better acquaint interested audiences, e.g., the National Institutes of Health, the U.S. Congress, and the general public, with the potential for improving and maintaining health through the integrated research efforts of the behavioral and biomedical communities.

CONCLUDING REMARKS

The four major conclusions reached at the Yale Conference on Behavioral Medicine document the emergence of a new conceptual integration linking the efforts of the behavioral and biomedical sciences in problem areas of mutual concern. This article cannot adequately portray the interest, concern, and enthusiasm of the individual participants at the conference. We have not attempted to record the wealth of historical anecdotes mentioned at the conference regarding the evolution of theory and research in psychosomatic medicine and psycho-

[9] Prior to the conference, Plenum Publishing Corporation indicated its intention to publish a journal in behavioral medicine, pending the selection of a suitable editorial board. An advisory board was selected by Plenum to assist in the selection of such an editorial board. This advisory board, consisting of conference participants Drs. David Glass, Joseph Matarazzo, Neal Miller, Gary Schwartz, Albert Stunkard, and Stephen Weiss, also recommended to Plenum that the basic principles herein endorsed by the participants of the Yale Conference on Behavioral Medicine serve as editorial guidelines for the new journal.

[10] In a letter to Dr. Schwartz following the conference, Dr. Neal Miller suggested that "Inquiries about [the feasibility of forming] a Society for Behavioral Medicine could be sent out on behalf of the people meeting at our conference, containing the names of all those attending at the time we discussed this matter, and perhaps others, if they agree."

physiology. Nor have we illustrated the difficulties that prior conferences of this type have had in getting their groups of behavioral and biomedical participants to agree on common goals and strategies. Rather, what we have done is briefly summarize the encouraging progress made at the Yale Conference in formulating concrete proposals for a new definition, statement of scope, and set of goals for the evolution of the field of behavioral medicine. It is to be hoped that this information will be instrumental in stimulating awareness, reaction, and further discussion among researchers, clinicians, and laymen concerning this important scientific development.