Health Behavior, Illness Behavior and Sick Role behavior

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MUCH CONFUSION has been contributed to the study of diseases, "psychosomatic" illnesses in particular, by failure to recognize that the psychological component of the phenomenon under study was often the factor which brought the patient to the doctor, not the factor which brought on the disease. Further confusion has been added sometimes by failure to recognize and separate the three major aspects of behavior related to health and illness. It is our present purpose to review selectively the voluminous English literature, beginning with a classification scheme and gradually unfolding a theoretical framework in order to organize and illuminate already available findings, as well as to suggest future research.

We begin with three definitions. Health behavior is any activity undertaken by a person believing himself to be healthy, for the purpose of preventing disease or detecting it in an asymptomatic stage. Illness behavior is any activity, undertaken by a person who feels ill, to define the state of his health and to discover a suitable remedy. The principal activities here are complaining and seeking consultation from relatives, friends, and from those trained in matters of health. Sick role behavior is the activity undertaken by those who consider themselves ill, for the purpose of getting well. It includes receiving treatment from appropriate therapists, generally involves a whole range of dependent behaviors, and leads to some degree of neglect of one's usual duties.

In this review, we seek to understand the pattern and the sequence of interacting social and psychological forces on the individual as he reacts to his state of health and the associated changes. These forces may be cumulative as the person moves from health to illness to sick role behavior. At each stage, the additional pressures make this tripartite division significant from a sociopsychological standpoint as well as from a health-illness viewpoint.

The proposed sociopsychological perspective broadens the traditional approach to the study of diseases begun under the aegis of social medicine. The gradual evolution of the study of diseases from the germ theory and the doctrine of specific etiology to social medicine and medical sociology is ably described by King. Clearly, a thorough
understanding of the cause, course, and outcome of many diseases, and of the patient's behavior as he seeks out diagnosis and treatment, requires additional research carried out within this broad perspective.3-6

The Classification

Our framework seeks to clarify the behavioral accompaniments of changes in health which may be seen as a sequence of stages characterizing in a hypothetical schema the progression of most diseases:7 (1) health, (2) asymptomatic disease susceptible to detection, (3) symptomatic disease not yet diagnosed, (4) manifest disease at the time of diagnosis, (5) course of disease as influenced by treatment, and (6) disease after therapy, i.e., either cured, in chronic state, or having eventuated in death. At this level, illness is viewed as a disturbance of some normal function of body processes, marked by certain symptoms, and taking a certain course. These stages are presented as the bottom line in Fig 1.

In addition to the biologic level, we may also consider the stages of health and illness at the sociopsychological level, where they can be seen as the changes in the individual's capacity to carry out his normal social obligations. Being sick may be looked at as giving up, in part or totally, the performance of one's customary duties. This conforms rather well to popular conceptions8,9 and is implicit in the working definition of illness in the US National Health Survey interviews.10 Parsons11,12 observed with great insight that when one becomes ill, one does not simply drop one's customary roles—the role of a parent, spouse, or provider; one actually adopts a new role which supersedes the others. Parsons called this the "sick role."

The concept of any role13-15 implies two sets of expectations: how the individual in a certain role should behave and how the others should behave toward him. Such norms or rules of behavior indicate what behavior is prescribed, what is allowed, and what is proscribed. These rules apply both to the person in the role and to those who have to deal with him because he is in that role. When Parsons coined the term "sick role," he in effect suggested that in our society there are explicit and implicit rules about being sick. The individual is not held responsible for his incapacity and he is exempt from normal social obligations. On the other hand, the role of the sick is seen
as undesirable, perhaps deviant. Therefore, the person should try to get well and is under an obligation to seek competent help. Parsons went on to describe the complementary role of the physician or therapist. This therapeutic role, designed as it is to reverse the disease process and enable the patient to resume his normal social duties, is characterized by permissiveness, support, denial of a reciprocal relationship, and by the power to manipulate rewards and sanctions.

Using the focal concept of role, we may now state the behavioral stages of health and illness as follows: (1) adequate performance in usual roles, (2) diminished capacity for such performance and preparing to enter the sick role, (3) adopting the sick role, and (4) leaving the sick role (Fig 1). In order to elaborate the second stage of the above schema, Mechanic introduced the term illness behavior, which "refers to the ways in which given symptoms may be differentially perceived, evaluated and acted (or not acted) upon by different kinds of persons." That is, in the presence of symptoms, an individual has at least three choices: he may seek diagnosis, enter into some treatment, or absent himself from work. He may do all of these, some of these, or none of these.

The reader will note that in Fig 1 another level of description is used, the level of self-identity. The concept of self-identity is introduced for two reasons. First, we want to be able to make a distinction between personal and situational (role) determinants of behavior; an individual's action may be seen as a joint function of the role demands and of self-identity. In addition, we want to be able to study internalization of role demands, the process of identity formation or change which results from acceptance of the demands of one's major life roles as one's own rules of behavior. Thus, a prolonged enactment of the sick role may lead to lasting identity changes. Second, a person's body image is an important component of his self-identity which should be a useful variable in the study of diverse diseases, the effects of physical disability, or clinic consultation habits.

Once we have delineated the several levels, it should be evident that the stages at the health level may or may not be accompanied by appropriate and corresponding stages in illness and sick role behavior. This discrepancy between health and behavioral levels and its determinants constitute the focus of our investigation. We shall address ourselves to three problems: (1) Under what circumstances, in the absence of symptoms, will individuals engage in health behavior or preventive health practices? (2) When will the presence of symptoms lead to seeking diagnosis and treatment? (3) When will the individual adopt the sick role and what are the determinants of the length of the sick role period; that is, what variables influence not only the acceptance of treatment but also the rate of convalescence and resumption of normal obligations?

The answers to these questions can be best formulated in a theoretical framework, a model of action, which is in large part based on the work of Hochbaum, Rosenstock, and collaborators. This model can be used, with appropriate additions, in understanding each of the three kinds of health-

Fig 1.—The continuum from health to disease, related to behavior, identity, and role performance.
related behaviors and appears to be somewhat more precise and specific than the suggestions of other writers in this area. While basically the same model is used to describe health, illness, and sick role behavior, it should by no means be assumed that individuals who are more inclined to take preventive health measures will also show a greater propensity to seek diagnosis and treatment when symptoms appear, or to enter the sick role after diagnosis. This is partly because while the stimulus which initiates illness behavior will be generally the symptom itself, the stimulus of preventive health behavior may be unknown, may come from mass media, personal friends, or educational materials. It is also possible that some individuals are inclined to underestimate their susceptibility to a disease in the absence of symptoms, but to overestimate it once some symptoms do appear.

The Theoretical Framework

The likelihood that an individual will engage in a particular kind of health, illness, or sick role behavior is a function of two variables: the perceived amount of threat and the attractiveness or value of the behavior. The amount of threat depends on at least three variables: (1) the importance of health matters to the individual, (2) the perceived susceptibility to the disease in question, and (3) the perceived seriousness of the consequences of the disease. The attractiveness of the contemplated action depends on: (1) the perceived probability that the action will lead to the desired preventive or ameliorative results, and (2) the unpleasantness or "cost" of taking the action compared with taking no action and suffering the consequences. We are talking, of course, about action possibilities of which the individual is aware.

This model of action is clearly a skeleton at best. It directs attention to a certain broad class of variables and suggests how these variables interact, but not the possible determinants of the variables themselves. For example, the dimension labeled "importance of health matters" may be influenced by age, sex, occupation, subcultural values, fluctuations in mood, and so on. The nature of these determinants is largely an empirical question and will be considered later.

Another limitation of the model is that one doesn't know within what limits it is operative. For example, is there a level of threat which is optimal to motivate health and illness behavior and beyond which psychological defenses begin to interfere? Rosenstock et al suggest that moderately intense threat is most effective but do not offer any supporting evidence. Clearly this is an important issue with practical implications; for example, officials of the American Cancer Society need information concerning the optimal strength of fear appeal to motivate prompt health and illness behavior. We shall return later to this problem when the relevant studies have been examined.

Sick role behavior, then, appears to have some significant, nonmedical determinants which, when derived from a broad role theory viewpoint, may be listed in the form of the following broad questions (see also Mechanic's discussion of this problem):

1. What are the expectations, norms, or role pressures, with regard to sick role behavior? How well has the individual understood and internalized these norms? How are these norms influenced by such variables as occupational settings and subcultural values? How do these sick role norms complement or conflict with the norms of the individual's other roles?
2. Who are the significant individuals whose norms about sick role behavior are most influential and what power do they have? Do they send the sick individual consistent or conflicting norms? Does their influence increase in proportion to the importance to them of his customary duties, as Mechanic has suggested? This would have implications for understanding the relationship between occupational status and illness absences.

3. How congruent are the sick role norms with the individual's self-identity, that is, his personality and need structure? Does the adoption of passive, compliant, and dependent behavior violate an individual's beliefs about what kind of a person he is and how he ought to behave?

4. What are the rewards and punishments which favor or impede adoption of the sick role, remaining in it, and resuming normal social obligations?

5. What are the supporting (enabling) and inhibiting behaviors of persons in reciprocal roles, such as doctors, nurses, family members, and employers? What is the availability of such persons?

This listing of environmental, interpersonal, and personality determinants is again merely an outline of a theory; it alerts us to some nonmedical variables thought to affect the occurrence of some particular behavior relevant to the sick role.

Sociomedical Studies of Human Behavior
Dealing With Health and Illness

The following review of the literature will examine studies dealing with: (1) health behavior or preventive health measures, (2) illness behavior or seeking diagnosis and treatment, and (3) sick role behavior. Our presentation is organized with maximal relevance to the theory just outlined, but the fit between the theory and the data is far from perfect. Some findings involving variables such as demographic data are presented because they are relevant but do not support any particular hypothesis. On other occasions, empirical evidence is lacking for a particular proposition contained in the theory. Industrial studies of illness absences and company dispensary visits, representing a large, separate domain, are not included.

Studies of Health Behavior.—Preventive health measures available to an individual are, by and large, of two kinds: health examinations to find out about one's health and to detect a disease in its asymptomatic stage, and seeking to reduce the probability of future illness through immunization, prenatal care, and so on. (Other behaviors which promote or maintain health, such as exercising or dieting, will not be considered in this review.)

Studies of participation in free health examinations reveal, in looking at a number of demographic and background variables, that high participation rates are more likely to occur in non-whites (with the exception of one study with a five year follow up), young or middle-aged individuals with high residential stability and a past history of high utilization of medical services. Veterans and residents of rural communities may also show higher participation rates. Knowledge about diseases and participation in community affairs seem to make little difference. Women show higher participation rates in three studies and no difference in a fourth. Income, education, and socioeconomic status do not reveal consistent results. Income and education possibly show a curvilinear relationship with highest participation in the intermediate range—about the same distribution as that for favorable attitudes toward doctors. However, in a study of frequency of physician contacts within a health insurance program, the intermediate education group had the fewest contacts.

Second, if we look at subjects' attitudes, then frequent participants in free medical examinations consider health matters important, see themselves as susceptible, and would rather find out than not about illness they may have. Moreover, they see the examination as reasonable and important to medical research. They believe that modern medicine can generally effect a cure. They tend to report their health as poor and want a checkup without insisting on getting it from their
own doctor. Positive attitudes toward the medical profession are not more common among them, but they will more readily consult a physician in the presence of symptoms. The examination is seen beneficial in two ways: they would profit from an early detection and they realize that one cannot always rely on the actual appearance of symptoms for early detection. A most interesting finding appears to be that unless the above beliefs are applied by the respondent to himself, they do not result in higher participation. That is, subjects who agree that x-rays can detect tuberculosis before the appearance of any symptoms, but who believe that they could tell if they had tuberculosis themselves, do not show higher participation. This fits in with the finding that subjects believe other people are more susceptible to diseases than they themselves are.

When the health examination is not offered free, financial considerations become a powerful determinant and the proportion of individuals coming to a physician solely to obtain a health examination is low and declines as we go down the socioeconomic scale. Most recent data show that about one-half of the respondents had visited a physician during the past five years for a checkup in the absence of symptoms.

There is an ongoing debate about the value of health examinations. The argument seems to revolve mainly around the frequency of "significant new pathology" which may be revealed by the examination. Estimates of the percentage of apparently healthy individuals who are found to have some pathology range from 30% to over 90%. Such estimates do not appear very meaningful since the different studies are not comparable even on such basic variables as age, sex, and socioeconomic status. Moreover, "significant new pathology" can hardly be defined precisely and to everyone's satisfaction. For example, is "10% overweight" either significant or new? The important point is that only some proportion of newly detected pathology is generally interpreted by the subjects as requiring action. On the other hand, there is a strong indication that of the new abnormalities detected, the anamnestic interview yields only 6% to 15% of the total and runs a poor third to physical examinations and laboratory tests.

Participation in free polio vaccine programs shows that those accepting the vaccine are younger, have more education and income, and come from higher social classes. When social class is held constant, Negroes and women participate more. Moreover, foreign born participate more than native born if they come from the upper classes but less if they come from the lower classes. Mass media are the best source of information about vaccines; those informed about the vaccines participate more. Private physicians are a source of information in 40% of largely upper class individuals. Among those with little education, perceived susceptibility to poliomyelitis or worry about it is related to higher acceptance. Higher acceptance rates are also found in areas with a high frequency of recent cases of polio. These generalizations, however, will not always hold. For example, when the vaccine is being introduced during a controversy over its safety, then the lower social class members show higher acceptance.

The issue of acceptance of preventive health measures also applies to influenza immunizations. When these are carried out on captive industrial populations to whom the immunization is offered free of charge, the acceptance rate runs between one-half and two-thirds. In only one study were variables examined in relation to the extent of participation and no differences were found due to age, sex, job classification, or union status. In another study, in which a follow-up questionnaire was used to find out how beneficial the employees considered the immunization program to be, those who participated expressed more positive attitudes. However, among the participants, more positive attitudes were found among those who did not have influenza subsequent to inoculation; whereas among nonparticipants, more positive attitudes were found among those who had influenza. Thus the understanding of the dynamics of
voluntary participation is important not only in its own right, but may be necessary to interpret data on the effectiveness of such programs. For example, in one study which included in its design participants who actually received no vaccine, effectiveness, measured by the admittedly inadequate criterion of absences due to respiratory conditions, depended on whether or not one chose to participate rather than whether or not one received vaccine. Even more paradoxical findings are reported in another study where lower absence rates from respiratory conditions were found among non-vaccinated nonparticipants. However, both studies were conducted under nonepidemic conditions and different results would probably have been obtained under epidemic conditions. In any case, our understanding of effectiveness seems to depend on a concomitant understanding of the dynamics of participation in a particular industrial setting.

Data on preventive dental health care, summarized by Kegeles, support rather well the same general model of action which explained participation in physical examinations. However, more recent findings suggest that the generality of the model depends on the design of a study. In a retrospective study, those who report many past preventive dental visits see themselves, at interview time, less susceptible to dental decay than those reporting few such visits. In a prospective study, those who see themselves less susceptible are found subsequently to have fewer preventive dental visits than those who see themselves more susceptible. To be sure, this reversal of association between perceived susceptibility and health behavior does not indicate any basic inconsistency of results.

The positive association of education, income, and occupational status with preventive dental visits appears to be stronger and more nearly linear than the association with physical examinations. People see themselves more susceptible to dental decay than to tuberculosis or cancer, but dental decay, while possibly painful and expensive, is neither seen as contagious, deadly, dramatic, nor as very disrupting of one's social roles. An interesting side issue here is the so-called fluoridation controversy where the attempts are to understand an active opposition rather than mere nonparticipation. Opponents of fluoridation have lower income and occupational status, and show less upward mobility during the previous ten years. Moreover, they have stronger feelings of helplessness and a lower sense of political efficacy; they do not see that an average citizen can do much about such problems as air pollution and flood control. Finally, while opponents of fluoridation are not substantially more opposed to science as such, they are, nevertheless, quite concerned with the diffuse, unanticipated but threatening consequences of scientific advances.

The findings on the adequacy of prenatal and postnatal care reveal a strong social class
mothers from upper classes come sooner for prenatal care, make more visits, receive considerably more postpartum care, and are more likely to be under the care of specialists rather than general practitioners. These findings, with the exception of one study, are explicable on the basis of financial cost. However, when one controls for income, differences due to education are maintained. Among the less educated, fewer believe in prenatal care within the first three months of pregnancy, fewer actually report for such care, and they show a larger opinion-performance discrepancy. (That is, holding the right belief, or at least stating it to the interviewer, is less of a guarantee among the less educated that it will be accompanied by appropriate action.) In summary, then, the findings on health behavior support a rather simple model of the relationship of perceived threat of disease to health behavior as depicted in Fig 2. Perceived value of preventive action is seen as the most important variable mediating the influence of perceived threat. Furthermore, both kinds of perceptions, of the threat and of the remedial action, are assumed to be influenced by diverse demographic and background variables. Conceptualized thus, the model in Fig 2 seems to describe satisfactorily the majority of findings. In pointing out the salient social and psychological determinants of health behavior, the model may also prove useful in the future teaching of preventive medicine.

Studies of Illness Behavior.—The basic problem of illness behavior is: in the presence of symptoms, what will the individual do and why will he do it? The answer is important, first, because successful treatment almost always depends upon the initiative of the patient in seeking diagnosis and treatment. Second, our understanding of many diseases is based on populations of self-referred sick patients. Systematic biases in self-referral, should they remain unknown, can seriously distort understanding of the disease process. To clarify the meaning and importance of the concept of illness behavior, we may briefly look at the voluminous literature on the role of emotion in the onset of disease. For example, it has been rather flatly asserted that the onset of such chronic diseases as diabetes, rheumatoid arthritis, multiple sclerosis, and Parkinson's disease is frequently associated with emotional stress. Others emphasize the role of environmental stress and life crises in the development of tuberculosis and cardiac diseases. Another group of writers emphasize a particular kind of emotional stress: the loss of support and separation from some important person. They assert that such stress and the ensuing reaction of giving up and feelings of hopelessness-helplessness may be a factor in the onset of leukemia, psychiatric illness, and perhaps disease in general. Finally, Hinkle and his collaborators seek to demonstrate, on diverse populations working in different settings, the intimate relationship between an individual's lifetime and present social environment, his perceptions of and reactions to this environment, and his illnesses.

Many of these studies possess serious shortcomings. They tend to be uncontrolled, retrospective, and often the possibility of unconscious observer bias seems maximal. There is some doubt that the reported incidence of "separation" experiences is much higher than what one may find in normal, healthy adults. However, the major point is that the above findings, no matter how sound or unsound, are open to the alternative interpretation that emotional stress in general or object loss in particular precipitates only illness behavior, not the illness as such. Psychological distress may sensitize a patient to already existing symptoms and directly influence his decision to seek medical care.

This point has been made by Mechanic in his discussion of the implications of the concept of illness behavior for medical sampling as well as by Stoeckle et al. The latter note that patients who seek medical aid on their own initiative very frequently exhibit psychological distress, mostly feelings of depression and grief, but sometimes also resentment. These findings agree with some clinical observations of Engel on "pain-prone" individuals and with the
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Psychological test data on industrial employees who come frequently to the company dispensary for reasons other than injury. Additional evidence supporting Stoeckle's observations comes from studies of the use of health services among college students and Army recruits. Students with low self-acceptance and those reporting frequent feelings of loneliness and nervousness visit the college infirmary more often. Moreover, students who report on a questionnaire a higher propensity to seek medical aid in the presence of specified symptoms come to the infirmary more often. Furthermore, they come with complaints of illness which are common, relatively familiar, and with a predictable outcome. Female students and those younger than their classmates also come to the infirmary oftener. Another study reveals generally inconsistent relationships between medical visits and many indices of adjustment, collected on several different populations of college students and Army recruits. It does not appear that either "separation" experiences or hypochondriasis is related to frequency of dispensary visits. Also relevant here is the finding that mothers under stress tend to report more illness symptomatology for themselves and for their children, and are somewhat more likely to phone their doctor concerning their children's health.

A thorough understanding of the concept of illness behavior leads to a reexamination of other findings. Let us look at three such areas: 1. Studies of the incidence of somatic disease in psychiatric patients show that a higher incidence of somatic illness accompanies a higher incidence of psychiatric illness. Speculation about "a healthy mind in a healthy body" should rule out the possibility that such a positive association is actually due to individual differences in readiness to admit to symptoms, be they physical or psychological. It is possible, as Mechanic suggests, that "persons who are likely to bring mood and behavior complaints to a psychiatric clinic are also likely to be sensitive to physical symptomatology."

2. One of the conclusions drawn by Hinkle et al. is that those individuals who had the greatest amount of sickness disability had experienced a wide variety of illnesses of various types, and various etiologies, involving a number of body systems; these authors believe that individuals exhibit differences in susceptibility not to specific diseases but to illness in general. A possible alternative conclusion would be that they are merely dealing with individual differences in propensity for illness behavior.

3. Finally, there are studies which attempt to link some social or psychological variable with the rate of progression of a disease, notably cancer. Any interpretation of such studies must first rule out the possibility that this social or psychological variable is not simply related to delay in seeking treatment so that the disease is more advanced when it comes to the physician's attention.

Since the problem of the possible role of emotional distress in illness behavior is so well covered by Stoeckle et al. only a few additional comments will be made. The concept of illness behavior does not settle many arguments; it broadens our interpretive base, where appropriate, without ruling out possible effects of psychological distress on the illness itself. For example, some recent, better designed studies of tuberculosis suggest a piling up of social stresses during the last two years before the onset of the disease itself; the fact that similar piling up of stresses also precedes pregnancy requires careful interpretation of all of the findings. Moreover, if entrance to a home for the aged is interpreted as a separation experience, then data on higher death rates within the first year after admission support the hypothesis that separation leads to illness rather than merely to illness behavior. The finding that under the stress of an imminent medical school examination, the frequency of common cold increases for students given a placebo, but not for those receiving a regular dose of ascorbic acid and lemon bioflavonoid, again makes the illness behavior interpretation of this situation inappropriate.

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Second, it is not known what proportion of individuals seek purely psychological help in coming to a physician or a dispensary. Third, it is not clear what effect physical symptoms have on psychological distress. A longitudinal design with follow-up data may be necessary to untangle the possible relationships. Thus Roessler and Greenfield discount the interpretation that bodily distress among college students leads both to low self-acceptance and to dispensary visits, for at the time when self-acceptance was assessed, the students did not experience or report bodily distress. Finally, if we attempt to apply to illness behavior basically the same theoretical model outlined in Fig 2 for health behavior, the role of psychological distress is not fully apparent: psychological distress may (a) increase the importance of health matters, (b) increase the perceived susceptibility, (c) make the consequences of disease look more threatening, or (d) raise the probability that action will lead to desired results. It is also possible that psychological distress generates symptoms from which the patient wants relief even though he does not believe them appropriate to present to the doctor.

In reading studies specifically concerned with determinants of illness behavior, an attempt to understand differences in seeking medical services, one quickly realizes that personal income is a less and less satisfactory explanatory variable. In a study of a representative sample of families in London, where a visit to a physician is free, over one-third of the families had a member who was suffering some pain or discomfort, but was not being treated. This compares quite well with earlier findings that only 40% of those who had a diagnosed disorder and also expressed discomfort about it, were under any kind of medical care. Anderson pointed out that:

As health insurance became more widespread and family incomes increased, the economic factor became less and less important as a reason for not seeking services; consequently, other factors were clearly at work.

What are some of these other factors?

One set of factors may be grouped conveniently as variables affecting the perception of symptoms; the important ones are social class, subcultural values, age, sex, and attitudes toward self. Social class plays a prominent role in Koos' pioneering study of the health of a community. Koos found a clear social class gradient in attitudes toward symptoms; the lower the class, the less likely was a specified symptom seen as requiring medical attention. For example, when presented with such a hypothetical symptom as "persistent pain in the back," then the lower the social class of the respondent, the less likely was he to indicate that such a symptom merits medical attention. It is not clear what factors underlie this gradient; Koos suggests that it not only reflects the felt need for treatment, but also the cost of the service and fear of treatment.

A number of studies suggest that the ethnic origin of an individual influences his perception and interpretation of symptoms. Zborowski's study of cultural components in response to pain suggests that Americans of Italian origin are concerned mainly with the immediacy of pain experience, while Jewish Americans focus upon the symptomatic meaning of pain and its significance for their health and welfare. "Old stock" Americans also show future-oriented anxiety about pain, but are much more optimistic than the Jews. Zola studied Italian, Irish, and Anglo-Saxon Americans and their decisions as to when to seek medical aid. He noted that, holding differences in objective symptoms constant, (1) Italian Americans seek aid when their symptoms interfere with social and personal relations. (2) Irish Americans tend to do so only after receiving the approval of others while (3) Americans of Anglo-Saxon origin see a physician when the symptom is considered to be interfering with some specific vocational or physical activity. Jewish college students seem to have a higher threshold for seeking medical attention than Protestant and Catholic students and appear at the student health service considerably less frequently (it is not known to what extent the admission policy at this college, Cornell, is selective with regard to the prospective student's religion). On the other hand, Jewish members of the Health Insurance Plan of Greater New York had more physician con-
tacts than Protestant or Catholic members. Jewish subjects also stand out in a study of reactions to physical disabilities: when asked to rank their preferences for drawings of children with various types of visible handicaps, Jewish children show a higher agreement among themselves than do non-Jewish children as well as a different order of preferences. The basis for such preferences was not investigated.

No studies have been found which specifically seek out effects of age and sex on perception of symptoms. However, reasonable inferences can be made from studies which compare physicians' evaluations of an individual's health with the latter's own evaluations. Under-reporting of symptoms is a more prevalent problem than over-reporting. Men and older subjects are more optimistic about their health than women and younger subjects. One study found no age or sex differences. Since under-reporting varies with the nature of symptoms and since many symptoms are age or sex-related, or both, more refined analyses than are presently available need to be made.

Three studies were detailed investigations of elderly subjects. The most striking finding was the relative lack of agreement between physicians' and subjects' evaluations of the latter's health, in all three studies agreement was between 60% and 65%, where 50% agreement is chance. Two studies permitted computation of tetrachoric correlations (estimated from a cosine-π table) and both were in the neighborhood of 0.30. A number of the subjects' attitudes relating to personal happiness, worry about health, and feeling oneself young vs old were strongly related to self-assessed health but not to the doctors' ratings. Those who were overly optimistic about their health came from non-manual occupations, had maintained their major lifetime work roles, and remained relatively active socially. These findings on the relationship of self-assessed health to various attitudes among elderly subjects are supported by two studies of college students which show that "body cathexis," the degree of feeling of satisfaction with various parts or processes of body, is positively related to satisfaction with various attributes of the self and negatively related to symptom scores on the Cornell Medical Index Health Questionnaire. Another study of college students reveals that those who are aware of their body's autonomic activity (respiration, heart rate, perspiration, etc.) do in fact show higher autonomic reactivity under conditions of intellectual stress.

Some implications of these studies are that, first, such differences in perception of symptoms influence an individual's readiness to seek medical aid and, possibly, to accept treatment. Second, differences in perceptions of symptoms cast doubt on the results of studies which rely on interviews or assessment techniques like the Cornell Medical Index. These methods, which are surprisingly sensitive to the interpersonal aspects of the interview technique, are probably vulnerable to the implied perceptual and self-report bias. This criticism of interview morbidity surveys is not new, but we are beginning to learn something about the nature of the bias which may be present. Many of the studies are methodological investigations of the adequacy of reporting illness while "attempts to link illness attitudes and behavior to quality of reporting are rare." One study in this direction finds that college students who are disinclined to seek medical aid in the presence of specified symptoms under-report more of their visits to a college infirmary the previous year. Third, can the known differences in the ways symptoms are perceived and acted upon teach us anything about a disease, its etiology, its course, or both? For example, Epstein et al report that in a homogeneous group of clothing workers in New York City, manifest coronary heart disease was twice as frequent among Jewish men as among Italian men. Moreover, while the overall prevalence rate of the disease among the Italians was associated with serum cholesterol levels, blood pressure, and body weight, the same three variables had no appreciable effect on the rates among the Jewish men. Can the work of Zborowski and Zola on cultural factors in re-
response to pain and interpretation of symptoms help us explain these puzzling findings? Clearly, at the moment one can only say that such work is a possible source for explanatory hypotheses.

In seeking diagnosis and treatment for symptoms possibly indicative of cancer, an example of illness behavior par excellence is available to us; such studies \(^{151,154}\) afford a good look at some sociopsychological variables involved in causes of delay in the diagnosis and treatment of cancer. The concept of delay has two possible meanings, depending on whether delay is computed from the date of first appearance of symptoms or from the time a complaint is recognized by the patient as requiring medical attention. Kutner et al. \(^{155}\) call these unavoidable and avoidable delay. We are more concerned with "avoidable" delay, even though "unavoidable" delay may reflect a period of defense by denial. Not all studies make this distinction nor define delay in the same way. Cobb et al. \(^{152}\) define delay as waiting more than three months after cancer was suspected, while Goldsen et al. \(^{153}\) call delayers those who waited at least three months between onset of symptoms and first attempts to seek diagnosis.

Persons who delay about cancer may be characterized as more likely to be older, \(^{122,155}\) native Americans of Protestant religion \(^{155}\) and lower socioeconomic status, \(^{122-155}\) coming from families with some experience with cancer. \(^{152}\) It is commonly asserted that delay for cancer is part of a more general habit of delay for other medical problems. \(^{153,155}\) However, at least one study \(^{154}\) talks about two types of delay patterns—for general medical symptoms and for cancer symptoms—which are differently related to social class. Holding other medical symptoms constant, presence of cancer symptoms tended to increase delay. \(^{154}\) The nature of cancer symptoms does not seem to influence delay. \(^{152,153}\) The site of the symptom, however, made a difference in one study \(^{153}\) in which symptoms which were noticeable and apparent to others were associated with greater delay; in another study, \(^{153}\) a comparison of internal vs. external sites yielded no differences. Better knowledge about cancer symptoms was associated with greater promptness in one study \(^{152}\) but made little difference in another. \(^{153}\)

The role of anxiety in cancer delay is rather complex. Cancer evokes more fear than other diseases, such as polio, arthritis, or tuberculosis, \(^{158}\) patients awaiting an examination for cancer are clearly anxious. \(^{151}\) Cancer is seen as less preventable than tuberculosis or dental decay and about 43% of adults see themselves susceptible. \(^{42}\) And while respondents believe other people are more susceptible to diseases than they themselves are, this difference is considerably larger for cancer than it is for tuberculosis or tooth decay. \(^{42}\) Rosenstock et al consider this differential in projected susceptibility indirect evidence of the greater anxiety aroused by cancer. Fear of cancer is higher among the less educated and those who know more about the disease and who consider it highly prevalent and expensive to treat. \(^{156}\) but it is not clear how anxiety influences delay. Cobb et al. \(^{152}\) suggest that those who delay appear to be immobilized by the threat of the disease whereas those who are prompt in seeking diagnosis use their fear constructively to initiate action. Kutner et al. \(^{155}\) note that sometimes fear triggers positive action while at other times it inhibits it. They suggest that general anxiety about cancer will be associated with delay if accompanied by knowledge of the danger signals, a conclusion supported by the Goldsen study. \(^{153}\) These authors also note that reticence about one's symptoms increases delay, perhaps because one cuts oneself off from social pressures. For a more comprehensive review of this literature see Blackwell. \(^{196}\)

These studies lead to the conclusion that the role of anxiety in the delay of illness behavior is not yet clear. One possibility is that anxiety is curvilinearly related to such behavior. It was found \(^{187}\) that moderately intense fear is most effective in stimulating a group of subjects to adopt certain dental health practices. Anxiety may also interact with a number of other variables not assessed in studies reviewed above: individual differences in thresholds for anxiety arousal, different ways of coping with anxiety, subcultural norms with regard to anxiety about

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one's health, and so on. Cartwright et al. studied beliefs among smokers, quitters, and nonsmokers, and their results are a nice illustration of protective and anxiety-reducing distortions. They showed that smokers are less likely to believe that smoking affects health and if they believe it, they are more likely to think it affects health in others but not themselves. If asked about the level of smoking at which the danger of lung cancer starts, the more they smoke the higher they place the level. Festinger's theory of cognitive dissonance appears to be the most suitable framework within which to see these relationships between practice and belief. In summary, data on anxiety and delay do not lead to rejection of the general viewpoint that individuals will adopt those behaviors most effectively reinforced by reduction in anxiety. However, much more work is needed to determine what these behaviors are and whether they facilitate or interfere with prompt illness behavior. It is possible that, at moderate levels of anxiety, prompt action in seeking diagnosis most effectively reduces anxiety; however, at more intense levels, only maladaptive denial or arational medical practices effectively reduce anxiety.

A review of illness behavior must also include an examination of variables influencing "utilization of medical services." However, to illuminate the sociopsychological dynamics of illness behavior, utilization data possess a number of shortcomings. Since utilization rates presumably reflect both the person's actual state of health and his decision as to what to do about it, studies which do not hold the former constant yield ambiguous data: a relationship between a particular variable and utilization rates may be interpreted as an association of that variable with illness or with propensity toward illness behavior. Second, most utilization studies are conducted for the benefit of policy-makers, administrators, and health economists (see Anderson's recent review). They are predominantly concerned with such variables as frequency and types of services provided and their costs, but evince little interest in the many possible sociopsychological variables which may affect utilization rates. Age, sex, and social class are generally the only variables related to utilization. Third, utilization studies generally omit two aspects of illness behavior: self-medication, Polgar's "self-addressed" phase of health action, and the use of the various nonmedical functionaries, omissions which may not bother a public health official but are rather serious in trying to under-

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![Diagram](Fig 3.—The postulated relationship between symptoms and illness behavior (a supplement to Fig 2).)

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stand all of the sociopsychological aspects of illness behavior. Since little is known about self-medication, the consequences of this omission cannot be estimated. However, we do know something about the use of nonmedical personnel: it is a phenomenon confined largely to the lowest social classes and frequently follows prematurely terminated medical treatment. The primary reasons for it do not appear to be economic but rather come from the nature of the doctor-patient relationship. Finally, we may note that in terms of our classification schema, "utilization of health services" can be viewed as illness behavior or sick role behavior. Stoeckle et al. for example, assert that "most participation and utilization studies, while seemingly similar to the initial process of seeking medical advice, are really the repeated use or reuse of the doctor-patient relationship." This might imply that variables associated with initial seeking of medical aid need not be the same as those which keep the patient coming back.

Studies of rates of visits to physicians by non-members of health care plans show consistently higher rates for females over age 10 which hold for both acute and chronic illnesses and are not due to visits for conditions associated with pregnancy. Age shows a positive association with frequency of visits. In studies of members of health care plans, we find that these age and sex differences are replicated, both in visits to physicians and in hospital admissions. Men have higher rates of hospital admissions for chronic conditions and their stay at the hospital per visit is longer. Looking at marital status and hospital admissions, we find that being married is associated with the lowest rates among males and highest rates among females (corrected for conditions associated with pregnancy). Short- and long-term longitudinal investigations reveal a good deal of stability of utilization levels, probably a characteristic of individuals rather than of families because high utilizers are not concentrated in the same families. Individuals over 60 are most likely to be either very high or very low level utilizers and the proportion of those with no physician visits increases with age. Positive association between age and utilization rates found in cross-sectional studies is therefore rather misleading; the increasingly higher rates among older individuals seem to represent increased utilization, but for a decreasing proportion of individuals as successively higher age brackets are examined.

Social class data are not entirely consistent. One still finds positive association between social class and number of visits to physicians, but more and more often one encounters no differences in frequencies of consulting a physician, when an illness is reportedly present. The occasional curvilinear associations are not consistent. One study reports fewest physician contacts for a group of intermediate status while another study on a similarly intermediate group finds the most physician contacts (as derived from rates of reported illness and proportions of untreated illness). A British study of consultations in a total, self-contained community shows that miners as an occupational group had more consultations but otherwise no social class differences were apparent. Another interesting study of a total community, a village in Israel, contrasted those who wanted to stay in the community and, by consensus of village leaders should stay, with those who wanted to leave and by consensus ought to leave: the former had fewer visits to a free medical center than the latter.

Attitudes toward doctors and provided services do not seem to affect utilization rates. Feldman reports that when one partials out statistically the effect of perceived medical needs, the correlation of attitude toward doctors with the number of times a doctor is seen per year is close to zero. A dissatisfied subscriber to a health plan may occasionally use an outside doctor but his level of utilization is not thereby strongly affected. An upper class British patient may prefer home visits or telephone consultations to visits to surgery, but his consultations are not less frequent. Thus, as long as we deal with so tenuous a form of the doctor-patient interaction as a consultation, attitudes toward doctors have rela-
tively little influence on frequency of such interaction.

This brief review of the utilization literature confirms the suspicion that it provides little about the determinants of illness behavior. However, certain plausible arguments are possible from other data, such as a longitudinal study of children from birth to 18 years which revealed that at all ages boys, not girls, had a greater frequency of respiratory illnesses, which accounted for 83% of total illness experiences. Yet women are more likely to follow recommended health practices, have more physician visits, and more hospital admissions, and college girls have more upper respiratory complaints. Within the limits of comparing such discrepant age groups, this suggests that women have a lower threshold for illness behavior than men. This would fit the finding that men have fewer hospital admission but their stay per visit is longer. If length of stay is an indicator of severity, then men seem to seek hospitalization only for relatively more severe conditions. Finally, typical industrial illness absence data (eg, Blumberg and Coffin, Enterline) also are consistent with the interpretation that women have a lower threshold for illness behavior. While this conclusion is not surprising, it is nevertheless difficult to document from typical utilization data.

Let us next consider studies dealing with seeking help for psychological problems and symptoms. This form of illness behavior is examined separately, since here we can no longer talk, without considerable controversy, about two distinct levels of description: the disease process at the biological level and the accompanying behavior of the individual. The work of Stoeckle and his collaborators suggests that an unknown, possibly large proportion of "medical" illness behavior may be in fact disguised seeking of help for primarily psychological problems. Thus, no sharp distinction can be made between these two forms of illness behavior and we must be satisfied with an admittedly inadequate measure of "psychological" illness behavior: seeking diagnosis and treatment from psychiatrists, psychologists, social workers, and so on.

Two survey studies, one on a national sample and the other on residents of Manhattan, have related help-seeking behavior to their questionnaire-based measures of mental health and to selected demographic variables. Gurin et al found greater readiness for self-referral among women, younger and more educated respondents, and those admitting to worries, unhappiness, or approaching nervous breakdown. Moreover, subjects reporting symptoms indicative of psychological anxiety had a high readiness for self-referral whereas those reporting symptoms of poor physical health exhibited low readiness. Similarly, Srole et al report that younger respondents and those from higher socioeconomic classes are more likely to have received treatment, though they are less likely to be rated as "impaired." If one considers only "impaired" subjects, then receiving treatment is unaffected by sex, age, or marital status— with the sole exception of very young single men who report higher rates of treatment. Catholic and foreign-born respondents, when rated "impaired," are less likely to have received treatment but this is not adjusted for socioeconomic status. These results are consistent with the conclusions of other authors that lower class patients tend to conceive of their problems in somatic terms, have a lower desire for psychotherapy, and are less likely to come to treatment on their own initiative. Other variables which facilitate the path to treatment are positive attitudes among friends and co-workers, and the propensity to experience anxiety and dissatisfaction with oneself.

A study of public attitudes toward mental health professionals shows that they are less favorable than attitudes toward other medical specialists; moreover, they are most negative among those who need the help most, eg, older respondents of lower social class. This naturally aggravates the problem of treating those in need of therapy. One survey estimated that 61% of "mentally ill" individuals received no treatment whatsoever and of the 39% treated cases, only one-half received treatment from appropri-
ately trained professionals. Unfortunately, the authors do not make it clear what criteria of mental illness they used nor even the questions they asked. The problem of untreated cases is much more than a matter of attitudes. Lack of appropriate treatment facilities and services is another factor emphasized by many writers.\textsuperscript{179,180,187,188} This lack, however, is a complex variable from the viewpoint of the needy individual: (1) He knows where to go but is not accepted for treatment. (2) He knows he needs psychiatric help but does not know where to get it. (3) He doesn't know he needs professional help of a special kind. For example, when survey respondents are faced with a hypothetical situation involving a behavior problem or a case of a mental illness, about half of them\textsuperscript{180} or more\textsuperscript{187} recommend no professional help whatsoever. Moreover, 61\% knew of no psychiatric facility where they themselves could go\textsuperscript{186} Along similar lines, Gurin et al\textsuperscript{179} report that of individuals who had sought help for mental health problems (14\% of their total sample), fully 42\% went to a clergyman, rather than a psychiatrist or a psychologist. And the results of a British study\textsuperscript{188} show that general practitioners clearly differ in their inclination to refer their patients, irrespective of the presenting complaints, to a psychiatrist.

The studies of illness behavior which have been reviewed cannot be summarized easily. Many deal with superficial demographic and background variables rather than with fundamental, theoretically derived attitudes and subjective perceptions. This has an advantage in the area of measurement but the disadvantage that one does not always understand the meaning of such associations. Consequently, we cannot go much beyond the simple relationship depicted in Fig 3, which is meant as an addition to Fig 2 and, therefore, all the variables of that figure are still assumed to function. Two new major variables are introduced: psychological distress and the discomfort arising from the symptom. This is because we want to go beyond the purely cognitive significance of a symptom—what does the symptom indicate about one's present and future health and what should one do about it—in order to take into consideration the imperative quality of a painful symptom which demands prompt relief.

Figure 3 suggests that symptoms may cause psychological distress, that psychological distress may cause symptoms, and, furthermore, psychological distress may influence the relation between symptoms and relevant illness behavior. Under psychological distress, a number of variables are included. At present, the depression syndrome and anxiety appear dominant but it seems likely that breaking the depression syndrome down into components such as resentment, low self-esteem, loss of sense of social support, guilt, sadness, etc, will prove profitable.

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