

Why People Use Health Services

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Introduction

Aims of the Paper

The principal aims of this paper are (1) to increase professional health workers' knowledge of selected research findings and theory so that they may better understand why and under what conditions people take action to prevent, detect and diagnose disease; and (2) to increase awareness among qualified behavioral scientists about the kinds of behavioral research opportunities and needs that exist in public health.

A matter of personal philosophy of the author is that the goal of understanding and predicting behavior should appropriately precede the goal of attempting to persuade people to modify their health practices, even though behavior can sometimes be changed in a planned way without clear understanding of its original causes. Efforts to modify behavior will ultimately be more successful if they grow out of an understanding of causal processes. Accordingly, primary attention will here be given to an effort to understand why people behave as they do. Only then will brief consideration be given to problems of how to persuade people to use health services.

Focus and Limitations of the Paper

Kasl and Cobb recently provided a classification of various behaviors in the health area that provides a useful framework for considering the focus and limitations of the present paper.¹ They define health behavior as "any

The Milbank Quarterly, Vol. 83, No. 4, 2005 (pp. 1–32)

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Reprinted from The Milbank Memorial Fund Quarterly, Vol. 44, No. 3, Pt. 2, 1966 (pp. 94–124). Style and usage are unchanged.

activity undertaken by a person who believes himself to be healthy, for the purpose of preventing disease or detecting disease in an asymptomatic stage." Illness behavior is defined as "any activity undertaken by a person who feels ill, for the purpose of defining the state of his health and of discovering suitable remedy." Finally, sick-role behavior "is the activity undertaken by those who consider themselves ill for the purpose of getting well." In terms of these distinctions, the present paper emphasizes research on the determinants of health behavior and to a lesser extent, research on illness behavior. No attempt will be made to treat the voluminous literature on sick-role behavior for two reasons. First, the public health worker is more centrally concerned with behavior relative to prevention, early detection and diagnosis of illness than he is with behavior in response to diagnosed illness. Second, the author's research experience is largely confined to studies of health behavior, as defined by Kasl and Cobb.

Another limitation that should be made explicit is that virtually all material to be presented has been drawn from studies of various subgroups of the population of the United States. No attention will be given to the contributions accruing from studies of other cultures.

The Determinants of Individual Health Behavior

Studies of How People Use Health Services

Consideration may first be given to the relationship between studies of how health services are used and an understanding of why health services are used. Do studies of how people use services explain why people use health services? In approaching an answer to this question, a careful distinction should be drawn between studies of utilization whose findings are intended to have immediate application, and studies of utilization which are intended to serve as means to still other research ends. In the first case, information is sought to serve as a basis for formulating and implementing public policy in the health area. Utilization data obtained for such purposes have proved invaluable in the health field.²⁻⁴

However, studies of the use of services may also be undertaken as means to achieve the broader aim of increased understanding of why services are used. In this sense, utilization studies are intended to generate

hypotheses about why services are used. Such utilization studies have generally failed to accomplish their purpose. Little can be learned from these studies about why people use or fail to use certain services. Evidence in support of this conclusion has been drawn from studies of high and low users of free medical examinations,⁵ detection tests for cervical cancer,⁶ polio immunization,⁷ dental services,^{8,9} physicians' services,^{3,10} hospital services¹¹ and from studies of the characteristics of those who do and those who do not delay in seeking diagnosis and treatment of cancer.^{1,12}

Analyzing the major findings of studies on the patterns of use of preventive and detection services permits certain summary generalizations about the association of personal characteristics with the use of services. In general, such services are used most by younger or middle aged people, by females, by those who are relatively better educated and have higher income (though perhaps not the very highest levels of education and income). Striking differences may nearly always be found in acceptance rates between whites and non-whites, with whites generally showing higher acceptance rates, although occasional exceptions occur.

A review of the previously cited data on utilization of diagnostic and treatment services provided by the physician, the dentist and the hospital, suggests a pattern quite similar to that obtained in connection with preventive and detection services. In general, more females than males visit the physician and the dentist and incur hospitalization, even when hospitalization for pregnancy is excluded. Higher socioeconomic groupings (defined in terms of educational and income level) are also more likely to obtain medical, dental and hospital services, although the associations between income and utilization are becoming less marked.^{2,3}

With reference to race, whites show much higher utilization rates than non-whites in all three utilization categories (physician visits, dental visits and hospitalization).

The nature of the association between age and utilization of treatment services is generally different from that found between age and seeking preventive and detection services, probably reflecting the effect of objective medical and dental need.

With respect to characteristics of those who delay in seeking diagnosis and treatment of cancer, similar patterns emerge. In general, persons who delay are older, of low educational status and, at least in some studies, males.¹²

Although most studies of utilization do not throw light on why people use health services, one area of research can be identified in which quite

sophisticated efforts have been made to understand health and illness behavior as a function of personal characteristics; an area described by Kasl and Cobb as "variables affecting the perception of symptoms." Several other workers attempt to link personal and subcultural variables to the individual's likelihood of perceiving an event as a symptom or to his mode of responding to a symptom. For instance, Koos found a social class gradient in terms of the likelihood of interpreting a particular sign as a symptom.¹³ Stoeckle, Zola, and Davidson studied the effects of ethnic values upon the specific decision to seek medical attention and on the differential interpretation of objectively similar symptoms.^{14,15} Freidson illustrated the different processes through which members of different social groups move in obtaining diagnosis (lay and professional) and in seeking care.¹⁶ Suchman attempted an interesting and promising approach which links demographic factors to social structure, both of these to medical orientation and in turn to health and medical care.¹⁷

Studies of the kinds performed by Koos, Stoeckle, Zola, Freidson and Suchman are far superior in their ability to explain than are the more traditional analyses of relationships between demographic factors and the utilization of services. This superiority lies in the proposed linking mechanisms between personal characteristics and behavior. These studies also demonstrate that health decision making is a process in which the individual moves through a series of stages or phases. Interactions with persons or events at each of these stages influence the individual's decisions and subsequent behavior.

Yet, even these sophisticated studies limit their focus to illness behavior; that is, to behavior undertaken in response to symptoms. The findings are, thus, of unknown relevance to the situation confronting the person who must decide whether to seek preventive or detection services before the appearance of events that he interprets as symptoms. Suchman explicitly notes the failure of his concepts of social structure and health orientation to account for preventive health actions.¹⁷ Stimulating the development of a preventive orientation in the public is the heart of most educational programs in public health.

A Model to Explain Health Behavior

Within the past decade several theoretical papers and empirical research reports have appeared which deal with a particular model for explaining health behavior in individuals who believe themselves to be free of symptoms or illness.¹⁸⁻²⁶ A comprehensive description and critique

of the model²⁸ will be provided, as well as a presentation of research evidence that tends both to support it and to contradict it. An analysis will be made of the questions that remain unanswered and of the kinds of research that will be needed to answer these questions. The model does not attempt to provide a comprehensive explanation of all health action. Rather, what is attempted is the specification of several variables that appear to contribute significantly to an understanding of behavior in the health area.

Considerable detail will be provided although the model is far from having been proven valid and useful. This is justified on the grounds that the model seems to provide a most promising framework for explaining large segments of behavior relevant to health and for unifying what, at the moment, are unrelated findings from several investigations. Possibly, though the attempt will not be made in this paper, the model, formulated essentially to explain health behavior (in the sense used by Kasl and Cobb¹) can ultimately be applied as well to explaining illness behavior and sick-role behavior.

Before turning to a presentation of the model itself, a few words about some of its general characteristics are in order. The major variables in the model are drawn and adapted from general social-psychological theory, notably the work of Lewin.²⁷ The variables deal with the subjective world of the behaving individual and not with the objective world of the physician or the physicist. The two, no doubt, are correlated, but the correlation is far from perfect. The focus in the application of the model is to link current subjective states of the individual with current health behavior.

A truism in social psychology is that motivation is required for perception and action. Thus, people who are unconcerned with a particular aspect of their health are not likely to perceive any material that bears on that aspect of their health. Even if, through accidental circumstances, they do perceive such material, they will fail to learn, accept or use the information.

Not only is such concern or motivation a necessary condition for action; motives also determine the particular ways in which the environment will be perceived. That a motivated person perceives selectively in accordance with his motives has been verified in many laboratory studies²⁹ as well as in field settings.³⁰

The proposed model to explain health behavior grows out of such evidence. Specifically, it includes two classes of variables: 1. the psychological state of readiness to take specific action and, 2. the extent to which

a particular course of action is believed, on the whole, to be beneficial in reducing the threat. Two principal dimensions define whether a state of readiness to act exists. They include the degree to which an individual feels vulnerable or susceptible to a particular health condition and the extent to which he feels that contracting that condition would have serious consequences in his case.

Readiness to act is defined in terms of the individual's points of view about susceptibility and seriousness rather than the professional's view of reality. But the model does not require that individuals be continuously or consciously aware of the relevant beliefs.

Evidence from studies to be discussed subsequently suggests that the beliefs that define readiness have both cognitive (i.e., intellectual) elements and emotional elements. The author's opinion is that the underlying emotional aspects have greater value in accounting for behavior than do the cognitive elements.

Perceived Susceptibility. Individuals vary widely in the acceptance of personal susceptibility to a condition. At one extreme is the individual who, during interview, may deny any possibility of his contracting a given condition. In a more moderate position is the person who may admit to the "statistical" possibility of its occurrence but to whom this possibility has little reality and who does not really believe it will happen to him. Finally, a person may express a feeling that he is in real danger of contracting the condition. In short, as it has been measured, susceptibility refers to the subjective risks of contracting a condition.

Perceived Seriousness. Convictions concerning the seriousness of a given health problem may also vary from person to person. The degree of seriousness may be judged both by the degree of emotional arousal created by the thought of a disease as well as by the kinds of difficulties the individual believes a given health condition will create for him.³¹

A person may, of course, see a health problem in terms of its medical or clinical consequence. He would thus be concerned with such questions as whether a disease could lead to his death, or reduce his physical or mental functioning for long periods of time, or disable him permanently. However, the perceived seriousness of a condition may, for a given individual, include such broader and more complex implications as the effects of the disease on his job, on his family life and on his social relations. Thus a person may not believe that tuberculosis is medically serious, but may nevertheless believe that its occurrence would be serious if it created important psychological and economic tensions within his family.

Perceived Benefits of Taking Action and Barriers to Taking Action. The acceptance of one's susceptibility to a disease that is also believed to be serious provides a force leading to action, but it does not define the particular course of action that is likely to be taken.

The direction that the action will take is influenced by beliefs regarding the relative effectiveness of known available alternatives in reducing the disease threat to which the individual feels subjected. His behavior will thus depend on how beneficial he thinks the various alternatives would be in his case. Of course, he must have available to him at least one action that is subjectively possible. An alternative is likely to be seen as beneficial if it relates subjectively to the reduction of one's susceptibility to or seriousness of an illness. Again, the person's belief about the availability and effectiveness of various courses of action, and not the objective facts about the effectiveness of action, determines what course he will take. In turn, his beliefs in this area are doubtless influenced by the norms and pressures of his social groups.

An individual may believe that a given action will be effective in reducing the threat of disease, but at the same time see that action itself as being inconvenient, expensive, unpleasant, painful or upsetting. These negative aspects of health action arouse conflicting motives of avoidance. Several resolutions of the conflict are possible. If the readiness to act is high and the negative aspects are seen as relatively weak, the action in question is likely to be taken. If, on the other hand, the readiness to act is low while the potential negative aspects are seen as strong, they function as barriers to prevent action.

Where the readiness to act is great and the barriers to action are also great, the conflict is more difficult to resolve. The individual is highly oriented toward acting to reduce the likelihood or impact of the perceived health danger. He is equally highly motivated to avoid action since he sees it as highly unpleasant or even painful.

Sometimes, alternative actions of nearly equal efficacy may be available. For example, the person who feels threatened by tuberculosis but fears the potential hazards of x-rays may choose to obtain a tuberculin test for initial screening.

But what can he do if the situation does not provide such alternative means to resolve his conflicts? Experimental evidence obtained outside the health area suggests that one of two reactions occur. First, the person may attempt to remove himself psychologically from the conflict situation by engaging in activities which do not really reduce the threat.

Vacillating (without decision) between choices may be an example. Consider the individual who feels threatened by lung cancer who believes quitting cigarette smoking will reduce the risk but for whom smoking serves important needs. He may constantly commit himself to give up smoking soon and thereby relieve, if only momentarily, the pressure imposed by the discrepancy between the barriers and the perceived benefits.

A second possible reaction is a marked increase in fear or anxiety.³² If the anxiety or fear become strong enough, the individual may be rendered incapable of thinking objectively and behaving rationally about the problem. Even if he is subsequently offered a more effective means of handling the situation, he may not accept it simply because he can no longer think constructively about the matter.

Cues to Action. The variables which constitute readiness to act, that is, perceived susceptibility and severity as well as the variables that define perceived benefits and barriers to taking action, have all been subjected to research which will be reviewed in subsequent sections. However, one additional variable is believed to be necessary to complete the model but it has not been subjected to careful study.

A factor that serves as a cue or a trigger to trip off appropriate action appears to be necessary. The level of readiness (susceptibility and severity) provides the energy or force to act and the perception of benefits (less barriers) provides a preferred path of action. However, the combination of these could reach quite considerable levels of intensity without resulting in overt action unless some instigating event occurred to set the process in motion. In the health area, such events or cues may be internal (e.g., perception of bodily states) or external (e.g., interpersonal interactions, the impact of media of communication, knowledge that some one else has become affected or receiving a postcard from the dentist).

The required intensity of a cue that is sufficient to trigger behavior presumably varies with differences in the level of readiness. With relatively low psychological readiness (i.e., little acceptance of susceptibility to or severity of a disease) rather intense stimuli will be needed to trigger a response. On the other hand, with relatively high levels of readiness even slight stimuli may be adequate. For example, other things being equal, the person who barely accepts his susceptibility to tuberculosis will be unlikely to check upon his health until he experiences rather intense symptoms (e.g., spitting blood). On the other hand, the person who readily accepts his constant susceptibility to the disease may be

spurred into action by the mere sight of a mobile x-ray unit or a relevant poster.

Unfortunately, the settings for most of the research on the model have precluded obtaining an adequate measure of the role of cues. Since the kinds of cues that have been hypothesized may be quite fleeting and of little intrinsic significance (e.g., a casual view of a poster urging chest x-ray), they may easily be forgotten with the passage of time. An interview taken months or years later could not adequately identify the cues. Freidson has described the difficulties in attempting to assess interpersonal influences as cues.³³ Furthermore, respondents who have taken a recommended action in the past will probably be more likely to remember preceding events as relevant than will respondents who were exposed to the same events but never took the action. These problems make testing the role of cues most difficult in any retrospective setting. A prospective design, perhaps a panel study, will probably be required to assess properly how various stimuli serve as cues to trigger action in an individual who is psychologically ready to act.

Evidence for and against the Model

Although many investigations have identified explanatory variables which are similar to one or another variable contained in the model, only seven major projects have been undertaken whose design was largely or entirely determined by the behavioral model. Of these, four were retrospective studies¹⁸⁻²¹ while three were prospective studies.²²⁻²⁴ The retrospective research projects have in common the crucial characteristic that data about respondents' beliefs and behavior are gathered during the same interview and the beliefs are assumed to have existed in a point in time prior to the behavior. That assumption is a questionable one at best and will be considered after a review of the retrospective research.

One other problem in the interpretation of the studies should be noted. With the exception of the Hochbaum study¹⁸ and the National Study of Health Attitudes and Behavior,²⁴ the research has been based on quite small samples. Sometimes sample size has been limited by financial or other insuperable obstacles. However, in some cases difficulties in categorizing responses or in obtaining responses to every necessary item have reduced samples to dangerously low proportions.

The best documented of the retrospective studies were performed by Hochbaum¹⁸ and Kegeles,¹⁹ and these will be reviewed in some detail.

Hochbaum studied more than 1000 adults in three cities in an attempt to identify factors underlying the decision to obtain a chest x-ray for the detection of tuberculosis. He tapped beliefs in susceptibility to tuberculosis and beliefs in the benefits of early detection. Perceived susceptibility to tuberculosis contained two elements. It included, first, the respondent's beliefs about whether tuberculosis was a real possibility in his case, and second, the extent to which he accepted the fact that one may have tuberculosis in the absence of all symptoms. Consider first the findings for the group of persons that exhibited both beliefs, that is, belief in their own susceptibility to tuberculosis and the belief that over-all benefits would accrue from early detection. In that group 82 per cent had had at least one voluntary chest x-ray during a specified period preceding the interview. On the other hand, of the group exhibiting neither of these beliefs, only 21 per cent had obtained a voluntary x-ray during the criterion period. Thus, four out of five people who exhibited both beliefs took the predicted action, while four of five people who accepted neither of the beliefs had not taken the action.

Thus, Hochbaum appears to have demonstrated with considerable precision that a particular action is a function of the two interacting variables—perceived susceptibility and perceived benefits.

The belief in one's susceptibility to tuberculosis appeared to be the more powerful variable studied. For the individuals who exhibited this belief without accepting the benefits of early detection, 64 per cent had obtained prior voluntary x-rays. Of the individuals accepting the benefits of early detection without accepting their susceptibility to the disease, only 29 per cent had prior voluntary x-rays.

Hochbaum failed to show that perceived severity plays a role in the decision-making process. This may be due to the fact that his measures of severity proved not to be sensitive, thus precluding the possibility of obtaining definitive data.

Kegeles¹⁹ dealt with the conditions under which members of a prepaid dental care plan will come in for preventive dental check-ups or for prophylaxis in the absence of symptoms. He attempted to measure the respondent's perceived susceptibility to a variety of dental diseases, the perceived severity of these conditions, his beliefs about the benefits of preventive action and his perceptions of barriers to those actions.

While the findings generally support the importance of the model variables, their general applicability is greatly limited by an unusually large loss in the sample. The study was initiated with a sample of 430,

but those without teeth, those for whom information was not available to determine whether past dental visits had been made for preventive purposes or for treatment of symptoms and those whose positions could not be coded on all three belief variables were excluded. The crucial analysis could thus be made only on 77 individuals. Within the major limitations implied by the small sample size and by the likely nonrepresentativeness of the 77, Kegeles showed that with successive increases in the number of beliefs exhibited by respondents from none to all three, their frequency of making preventive dental visits also increased. The actual findings show that 1. of only three persons who were low on all three variables none made such preventive visits, 2. of 18 who were high on any one variable but low on the other two, 61 per cent made such visits, 3. of 38 persons high on two beliefs and low on one, 66 per cent made preventive visits and, finally, 4. of 18 persons who were high on all three variables, 78 per cent made preventive dental visits. Similar patterns of findings based on much larger samples were obtained in an analysis of relationships between behavior and each of a series of single variables, that is, susceptibility, severity, benefits and barriers.

The findings of the two remaining retrospective studies will not be reviewed in detail but are in most respects quite similar to the two that have been reviewed.^{20,21} In each case evidence that supports the model has been obtained although the sample sizes were not large.

In summary, while no one study provides convincing confirmation of the model variables, each has produced internally consistent findings which are in the predicted direction. Taken together they thus provide strong support for the model.

As indicated, any interpretations made of the findings of the retrospective studies are based on an assumption. The hypothesis that behavior is determined by a particular constellation of beliefs can only be adequately tested where the beliefs are known to have existed prior to the behavior that they are supposed to determine. However, the retrospective projects have been undertaken in situations which necessitated identifying the beliefs and behavior at the same point in time. This approach has always been known to be quite dangerous. Work on cognitive dissonance³⁴ supported these suspicions and suggested that the decision to accept or reject a health service may in and of itself modify the individual's perceptions in areas relevant to that health action. Obviously, what was needed was a two-phase study in which beliefs would be identified at one point in time, and behavior measured later.

Such a study was undertaken in the fall of 1957, around the topic of the impact of Asian Influenza on American community life.²² As one of a series of related studies, Leventhal, et al. investigated the impact of the threat of influenza on families through the use of a design that was intended to permit a test of the model in a prospective manner. In this phase of the study, 200 randomly selected families in each of two medium size cities in the United States were interviewed twice. The first interview was intended to be made before most people had the opportunity to seek vaccination or to take any other preventive action and before much influenza-like illness had occurred in the communities. The second interview was to be made after all available evidence indicated that the epidemic had subsided.

In fact, only partial success was achieved in satisfying these conditions because community vaccination programs as well as the spread of the epidemic moved much faster than had been anticipated. For these reasons the sample on which the test could be made was reduced to 86. This sample of 86 respondents had, at the time of initial interview, neither taken preventive action relative to influenza nor had they experienced influenza-like illness in themselves or in other members of their families. Twelve of the 86 scored relatively high on a combination of beliefs in their own susceptibility to influenza and the severity of the disease.³⁵ Five of these 12 subsequently made preventive preparations relative to influenza. On the other hand, at the time of the first interview, the remaining 74 persons were unmotivated in the sense of rejecting either their own susceptibility to the disease or its severity or both. Of these, only eight, or 11 per cent, subsequently made preparations relative to influenza.³⁶ Although the samples on whom comparable data could be obtained were very small and possibly not representative, the differences are statistically significant beyond the one per cent level of significance. Analysis of the available data thus suggests that prior beliefs are instrumental in determining subsequent action.

A second prospective study was a follow-up by Kegeles²³ on the study reported earlier.¹⁹ Three years after the initial collection of data on a sample of more than 400 in 1958, a mail questionnaire was sent to each person in the sample as well as to a comparable control group to obtain information about the three most recent dental visits. The objective of the follow-up was to determine whether the beliefs identified during the original study were associated with behavior during the subsequent three-year period.

Kegeles found that perceptions of seriousness, whether considered independently or together with other variables, were not at all associated with subsequent behavior. Perceptions of benefits taken alone were not related to subsequent behavior. However, the perception of susceptibility did show a correlation with making subsequent preventive dental visits. Of those who had earlier seen themselves as susceptible, 58 per cent made subsequent preventive dental visits while 42 per cent who had not accepted their susceptibility made such visits. When beliefs about susceptibility and benefits were combined, a more accurate prediction was possible of who would or would not make preventive dental visits. Considering only those who scored high on susceptibility, and cross-tabulating against beliefs in benefits, 67 per cent of those high on both beliefs made subsequent preventive visits while only 38 per cent low in benefits made such visits. Thus, the combination of susceptibility and benefits is demonstrated to be important in predicting behavior.

The results of the six studies cited above lend support to the importance of several of the variables in the model as explanatory or predictive variables. However, a seventh major investigation,²⁴ currently in progress and not yet published, conflicts in most respects with the findings of earlier studies. The study includes analyses of beliefs and behavior of a probability sample of nearly 1500 American adults studied in 1963, and the subsequent behavior of a 50 per cent subsample studied 15 months later. Although the analysis is not complete, it already clearly shows that perceived susceptibility, severity, and benefits, whether taken singly or in combination, do not account for a major portion of the variance in subsequent preventive and diagnostic behavior, although predictions based on the belief in benefits taken alone frequently approaches significance. The study findings do not disclose any explanation for the failure to obtain findings similar to those of the earlier described studies, but the current national study has been conducted in a setting which distinguishes it from all the other reported studies in one respect that may be crucial. In the earlier described studies, the settings were such that the population in each case had been offered the opportunity to take action through directed messages and circumstances that could have served as cues to stimulate action. In Hockbaum's study,¹⁸ mass media had been used in the three study cities to urge the population to obtain chest x-rays. The Kegeles studies,^{19,23} offered every member of the population free or inexpensive dental treatment and urged them to use it. In the Levanthal,

et al. study,²² the population had been alerted by newspapers and by public health officials to the desirability of obtaining influenza immunizations. In the Heinzelmann study,²⁰ the patients had been urged to use penicillin prophylactically. The Flach study²¹ offered the population a free test for cervical cancer. In short, in all the prior studies the population had been exposed to information which both indicated the availability of a health procedure and which, in most cases, urged them to avail themselves of that procedure.

In contrast, no such condition obtained for the national sample in the study currently in progress. With respect to the several health problems covered in the study, neither the sample nor the United States adult population which it represents, had been uniformly exposed to intensive campaigns to inform them about available services and to persuade them to use such services. Nor can the assumption reasonably be made that preventive and diagnostic services were equally available to all. The absence of clear-cut cues to stimulate action as well as unequal opportunity to act may in large measure account for the failure to replicate the earlier results. However, those possibilities must be treated as hypotheses which will need to be tested in new research.

Critique of the Model and Needed Additional Research

The Place of the Model in the Health Decision-Making Process. As indicated earlier, health decision-making is a process in which the individual moves through a series of stages or phases in each of which he interacts with individuals and events. The nature of the interactions at any one of these stages may increase or decrease the probability that a particular subsequent response will be made. Freidson¹⁶ and Zola¹⁵ have illustrated some of these stages. The individual's relevant health beliefs as described in this paper are presumed to serve as a setting for his subsequent responses at other stages in the decision process. For example, individuals who accept their susceptibility to a particular condition and are aware of actions that might be beneficial in reducing their susceptibility may well exhibit what Freidson terms "cosmopolitan" rather than "parochial" orientations toward health services. They may be more prone to learn about and seek out professional diagnosis rather than using the "lay referral" system. In such a case the initial set of beliefs would itself determine subsequent choices in the decision-making process.

What have here been termed "cues" are probably identical with Zola's "critical incidents."¹⁵ One can not but agree heartily with his recommendation that the role of such triggers to action be much more thoroughly investigated than has previously been done. This is urged despite the forbidding difficulties in identifying cues that have already been described.

Operational Definitions of the Variables. No two studies of the model's variables have used identical questions for determining the presence or absence of each belief. This raises the possibility that the concepts being measured may also vary from study to study. For example, Hochbaum's questions on perceived susceptibility apparently tapped a dimension of perceived *possibility* or risk of contracting a disease.¹⁸ On the other hand, Kegeles¹⁹ asked questions oriented toward *probability* or likelihood of occurrence. The two approaches cannot be assumed to measure a single psychological dimension.

In an effort to bring some order into this area the current National Study of Health Attitudes and Behavior was undertaken.²⁴ In that study alternative methods were used to identify beliefs about the severity of and susceptibility to four diseases: dental decay, gum trouble, tuberculosis and cancer. Four different question formats were developed, differing simultaneously on two dimensions: 1. "self-reference" versus "reference to men-women your age;" 2. fixed-alternative versus more open items. A two by two design was used with approximately one-quarter of the total sample randomly assigned to each of the four question formats.

The preliminary findings demonstrate that the question types obtain different distributions of responses. However, since in the present study no clear relationship is demonstrated between possession of the beliefs, however measured, and health behavior, no decision can be made on which method of questioning is most valid.

Quantification. The model implies that certain levels of readiness are optimal in stimulating behavior but neither theory nor research have disclosed what the levels are. In most of the studies limitations in sample size have necessitated dichotomizing scores on the variables into categories of "high" and "low." Until data can be collected on at least an ordinal scale the problem of determining optimal quantities will not be solved.

Stability and Reliability of the Beliefs. Little is known about the stability of the beliefs although they may vary from time to time as a function of situational changes. Learning that a friend or a president has suffered a serious illness may well raise personal levels of readiness to act based

on increases in subjective susceptibility. Research is needed to determine how stable the beliefs are.

Similarly, little information is available on the reliability of the measures of beliefs. More work is also needed in this area. The appropriate approach to testing reliability depends on the stability of the beliefs. If the beliefs do change from time to time, test-retest measures of reliability would not be as appropriate as split-half measures of reliability.

Perceived Seriousness. Hochbaum,¹⁸ Kegeles²³ and Rosenstock, et al.²⁴ failed to demonstrate the importance of perceived severity in determining behavior. Flach²¹ did not measure severity since he assumed that cancer was universally seen as severe in the group of women studied. On the other hand, the studies by Heinzelmann,²⁰ the first Kegeles study¹⁹ and Leventhal, et al.²² did support the importance of perceived severity. Since the latter three studies suffer from greatly attenuated samples, greater doubt must be maintained about the importance of perceived severity as an explanatory factor than about the other variables.

Genesis of the Beliefs. Nothing is known about the genesis of the beliefs, nor of the conditions under which they are acquired. Moreover, no research has been done on how an individual's position on the three health beliefs is related to other comparable beliefs he holds. For a given person, how is the level of concern created by serious and probable disease related to threats caused by other hazards, such as the possibility of unemployment, the possibility of atomic bombing, etc.? Seemingly, the potential value of the model would be greatly enhanced if the origins and development of the health beliefs were specified and if the beliefs were placed within a broader theoretical framework that would account for responses to a wide variety of stimuli.

The Need for Experimental Studies. Convincing demonstrations of cause and effect can rarely, if ever, be provided through cross-sectional surveys of the kind thus far employed to study the model. This is true because the survey is highly susceptible to errors in judging which of two associated factors preceded the other in time and because the possibility is great that apparent relationships may be spurious. For these reasons, experimental studies must be undertaken to determine the causal role of the relevant health beliefs. For example, an effort could be made to modify the health beliefs of a randomly assigned experimental group while holding constant the beliefs of a comparable control group. Both groups would then be offered a particular health service and observations taken of the relative responsiveness of the groups to the health appeal. A variety

of specific experiments could be devised to assess the contribution of the health beliefs to behavior.

Susceptibility of the Beliefs to Modification. Even if the model did predict behavior, its ultimate usefulness would depend upon the extent to which the health beliefs can be modified in a planned way. Two efforts to attempt such change have been reported. Guskin,³⁷ through the use of a film, has succeeded in modifying the reported beliefs of fifth and sixth grade students relative to their perceived susceptibility to and severity of tuberculosis, although no changes in perceived benefits took place. In a study of fear arousal and persuasion, which will be discussed in some detail in a subsequent section, Haefner³⁸ has obtained data, as yet unpublished, which show that the health beliefs of ninth graders can be modified. High fear messages tended to have more favorable effects on beliefs about severity and preventability (benefits) than did low fear messages. One of two effects was observed: 1. high fear messages led to a greater increase in each of the two beliefs than low fear messages, or 2. high fear messages led to a smaller reduction in the beliefs than did low fear messages.

Results for perceived susceptibility were not clear; in one experimental treatment a high fear message led to a greater increase in perceived susceptibility than did a low fear message while in a second experimental treatment, a high fear message resulted in no change or even led to a reduction in susceptibility.

Universality of Model

1. Voluntary, symptom free health behavior. To date, the model has been applied exclusively in situations in which the behavior in question is purely voluntary and the individuals studied do not believe themselves to have symptoms. These criteria are not met in a variety of situations in which people obtain health services. For instance, social pressures may be effective in stimulating action. Legal compulsion and job requirements also account for much health behavior. Finally, the appearance of clear symptoms is a most frequent instigator to health action. The likelihood is, therefore, that only a minority of the population currently takes voluntary preventive action or action to detect disease in the absence of distinct symptoms. Despite these facts, continued work with the model may have great ultimate benefit. The aim in public

health is to increase the proportion of people who consistently, rationally and freely take preventive actions or actions to check on the presence of disease while free of symptoms. Careful analysis of the health decision processes in what is currently a small group of people may well be useful in subsequent planning of efforts to modify the behavior of very large groups of people. Studying the exceptional case may have vast practical implications for working with the more typical.

2. Health beliefs and social class. The health belief model would seem to have greater applicability to middle class groups than to lower status groups since possession of the health beliefs implies an orientation toward the future, toward deliberate planning, toward deferment of immediate gratification in the interest of long-run goals. The fact has frequently been noted, e.g., by Simmons,³⁹ that, unlike middle class groups, lower status people probably accord greater priority to immediate rewards than to long-range goals. This difference in the time orientation of the different social classes may well have implications for the planning of preventive health programs. But these implications are far from obvious ones. Hochbaum and Kegeles, in earlier cited studies, have indeed shown that social classes differ in the frequency with which the beliefs are held. But they have also shown that where the proper constellation of beliefs exists, the probability is greater that the recommended behavior will occur irrespective of social class. Thus, public health workers must recognize that members of the lower social classes are not as prone to accept health beliefs of the kind described as are members of the higher classes. But they must also recognize that many members of the lower classes do accept such beliefs, indicating their ability to adopt a long range perspective. Subjective time horizons are thus not immutable.
3. Health habits. A third possible limitation in the ultimate applicability of the model is in the case of habitual behaviors and in styles of behavior. Patterns of behavior that are developed in early life most likely are not motivated by the kinds of health concerns that may guide the adult's behavior. During the socialization process, children learn to adopt many health related habits and practices which will permanently influence their adult behavior, e.g., brushing teeth, visiting the physician or dentist regularly

and adopting unique nutritional practices. Yet, these patterns of adjustment can not be explained by applying the explanatory model to the children themselves. The habitual behavior of the child cannot be explained with certainty by applying the model to his parents. Preliminary data suggest that health behavior undertaken on behalf of children may not be explainable by reference to the present model.¹⁹ Research is clearly needed on the determinants of health habits.

The Relationship between Health Beliefs and Demographic Factors

Typical demographic analysis of utilization rates was previously criticized, partially on the grounds that few attempts have been made to show the mechanisms that link behavior with fixed, personal characteristics. However, two published studies are relevant in this connection. Kegeles, et al.⁶ investigated relationships among the use of Papanicolaou tests, demographic factors and beliefs in the benefits of early detection of cancer. Beliefs in benefits were measured by responses to questions on the perceived importance of early versus delayed treatment for cancer and on opinions as to whether medical check-ups or tests could detect cancer before the appearance of symptoms. An analysis of the findings discloses that personal characteristics and beliefs each make independent contributions to the understanding of behavior. Tests were much more likely to have been taken by women who were relatively young, age 35–44, white, had higher income, married, relatively well educated and who reported higher occupational levels (using husband's occupation in the case of married women).

The study also showed that accepting the benefits of early professional detection and treatment was highly associated with having taken the test. However, the joint analysis is of most interest. Within every demographic grouping those who held a belief in benefits were much more likely to have taken the test than those not holding that belief. Similarly, within each of the belief categories those with the appropriate demographic characteristics were much more likely to have taken the action than those who did not. Clearly, the joint effect of the beliefs and the personal characteristics is much greater than the effects of either alone.

In Hochbaum's earlier study,¹⁸ a similar finding was obtained. Socio-economic status (education and income) and the combination of beliefs

in susceptibility and benefits were independently associated with having taken voluntary chest x-rays in the absence of symptoms. Within each socioeconomic status category, however, those who scored high on the combination of beliefs were much more likely to have taken the x-ray than those scoring medium or low.

An interpretation of the findings of the two studies suggests that certain of the beliefs may be necessary for taking preventive or screening tests, but that they are distributed unevenly in the population, tending to be more prevalent among white females, of higher socioeconomic status and the relatively young. Why this is so is not known. Perhaps the earlier described information on differences in subjective time horizons of the different social classes may help to explain the unequal distribution of specific health beliefs.

Inducing Behavioral Change

The major focus in this paper has been on identifying factors that help to explain why people use health services. Since, however, the ultimate aim of understanding behavior in the health area is an applied one, the problem of persuading people to use health services may appropriately be considered.

Material presented earlier indicates that a decision to take a health action is influenced by the individual's state of readiness to behave, by his socially and individually determined beliefs about the efficacy of alternative actions, by psychological barriers to action, by interpersonal influences and by one or more cues or critical incidents which serve to trigger a response. No *a priori* reason may be found to indicate that action directed toward any one of these will in the long run prove more effective than action directed toward the others. Therefore, action programs to modify behavior could legitimately focus on any one or more of the determinants. Only systematic investigation will demonstrate the conditions under which one or another of the determinants is most susceptible to effective manipulation.

Despite the lack of definitive research findings, a few practical considerations may clarify the problem. Ordinarily, to change people is much more difficult than to change their environment (though the latter may itself represent no simple task). Therefore efforts to increase public response should always aim at minimizing the barriers to action,

increasing the opportunities to act (which will increase perceived benefits) and providing cues to trigger responses. Some simple but important environmental features may be modified with good effect, e.g., minimizing inconvenience by reducing financial costs of services and distances that have to be traveled to obtain them, and setting hours for service that are convenient. Moreover, cues may frequently be arranged to trigger responses, e.g., reminders from dentists and physicians, spot announcements in the mass media.

Fairly simple situational changes of the kinds described may well increase the rate of preventive and diagnostic behavior. However, their effect is probably limited, if current views of the determinants of health behavior are at all correct. Probably, after all situational improvements are made, a large number of individuals remain who are not in a state of readiness to act, and, other things being equal, will not. Concerning such people, one must ask whether a direct effort to increase the readiness can be successful and efficient or whether success is more likely through an indirect effort to stimulate the behavior as, for example, through the use of social pressures. Again, the question is empirical; definitive research has not been performed. However, some research material affecting a decision on this matter can be drawn from studies of communication and persuasion.

The Effects of Mass Communications

Literature and experience in communication of health information clearly demonstrate that large groups of individuals stand ready to take action on any given issue and merely lack the information or cue necessary to make the action possible. Mass media are undoubtedly effective in bringing to such groups all that is necessary to insure a response. Mass communications are thus effective in imparting information. However, in respect to changing opinions, Klapper has indicated that "Communication research strongly indicates that persuasive mass communication is in general more likely to reinforce the existing opinion of its audience than it is to change such opinions . . ."⁴⁰ Klapper's conclusions are based on the analysis of research findings on the effects of the 1940 and 1948 presidential campaigns upon change in voter preference, efforts to improve attitude toward the oil industry or toward the TVA and many others. Research is required to show whether these conclusions are applicable to attempts to change opinions in the health area. Until that

research has been done, one must maintain a skeptical position regarding the likelihood that mass media will provide the mechanism for changing rather than reinforcing health beliefs and behavior, especially if the beliefs are deeply embedded.

Self-Selection

Another fact of considerable importance for health and health research is that people tend to expose themselves to communications media and content in highly selective ways.

Lazarsfeld and Kendall have demonstrated that lower educational groups do not read newspapers, magazines, and books to the same extent as do groups with more education.⁴¹ Moreover, even when groups are exposed to the same medium, they may attend to and learn different things from the same material.

Some of the data reported in the studies of poliomyelitis vaccination campaigns reinforce that conclusion.⁷ Belcher found that the non-whites in his sample obtained their information on poliomyelitis and vaccination from personal sources (teachers, children, public health officials), while whites tended to get their information through impersonal sources. Similarly, Deasy showed that all women in her sample had been exposed to an identical brochure on the 1954 field trials, which had been brought home by their children. Practically all women in the sample had been exposed to daily papers which were featuring intensive coverage of the field trials. Nevertheless, the women differed in knowledge and acceptance of the program, acceptance being associated with amount of education.

Katz and Lazarsfeld conclude that people who are reached by educational programs through the mass media are very largely those who do not need the education. Those who do need the education tend to stay away. In their words, "Those groups which are most hopefully regarded as the target of the communication are often least likely to be in the audience. Thus, educational programs . . . are very unlikely to reach the uneducated. . . ."⁴²

The mass media have, and always have had, an important role in communication. However, the communication studies reviewed here suggest that the assets and liabilities of the traditional approach should be considered in the light of the particular needs that face health workers

in attempting to reach the lower income family, the family with little formal education, and the non-white family.

Emotional Appeals

Health workers have long been interested in the question of the role that fear-arousing messages may have in inducing attitude and behavior change. A 1963 publication which reviews research studies on the effects of fear-arousing communications concludes: "... on the basis of the evidence that has been cited it seems reasonable to conclude that fear is an unsatisfactory motive to employ in public health education."⁴³ That conclusion was based largely on a 1953 study by Janis and Feshbach⁴⁴ who showed that messages arousing little or no fear were more successful than messages arousing high fear in stimulating ninth grade children to change their attitudes and reported practices in the area of personal dental hygiene practices. Other related studies have obtained findings that low-fear arousal is superior,⁴⁵ that high-fear arousal is superior⁴⁶ or that no difference exists between low- and high-fear arousal.⁴⁷

In 1964, Haefner performed a replication and extension of the Janis and Feshbach study.³⁸ Using Janis and Feshbach's original experimental material in one experiment (as well as revised material in another), Haefner obtained main effects that were opposite to those of the earlier study—high-fear arousal being much more effective than low-fear arousal. Through secondary analysis, controlling on social class, Haefner was able to reconcile the results of his study with the results of the Janis and Feshbach study. In Haefner's study, children from families of relatively high social class were more influenced by low-fear messages, while children of lower social class were more influenced by high-fear messages. His initial finding, which had shown the greater power of high fear, was attributed to the fact that his ninth grade sample was preponderately lower class. If, as seems likely, Janis and Feshbach's sample in Greenwich, Connecticut, was primarily drawn from upper class families, the apparently discrepant findings of the two studies are readily reconciled.

Thus, to conclude that fear is uniformly to be eschewed in educational programs is premature. If Haefner's findings can be replicated, especially in settings using other health content, and with other age groups, the attempts to induce fear might, for certain subgroups of the population,

be much more effective than a more neutral or, as sometimes called, a more "positive" approach.

Personal Influence and the Resolution of Cognitive Dissonance

A great deal has been written about the potential power of personal influence techniques (i.e., those stressing face to face contacts) in communication and persuasion, especially with lower-socioeconomic groups. Many studies have been conducted in laboratory settings⁴⁸ and in natural field settings.⁴² However, relatively little research has been reported which clearly demonstrates the potency of personal influence on health behavior. Two well known studies^{49,50} demonstrated that a group discussion-decision method is apparently superior to a lecture in persuading women to alter certain nutritional practices and in persuading women to undertake periodic breast self-examination. However, in both studies information is lacking about the long-term duration of the effect. The superiority of the group discussion approach extends to at least a matter of weeks, but whether the effects continue over months and years is not known. Moreover, the interaction of socioeconomic status with educational method is not clear. Although the superiority of personal influence over mass communication techniques has so long been proclaimed, oddly enough, only few follow-up studies have been made. Studies are needed not merely to demonstrate that group methods are superior. The greater need is to specify the conditions under which the superiority, if any, may be enhanced.

One such potential enhancing condition is implied by Festinger's theory of cognitive dissonance.³⁴ When an individual has been induced to behave in a way that conflicts with a prior belief he holds, the conflict or dissonance has to be reduced. Frequently, the dissonance is reduced by changing the initial belief. One can only speculate that the application of group pressure upon the individual in a state of dissonance might provide a powerful inducement to modify certain of his beliefs.

The application of imagination and ingenuity could provide highly practical programs of research in health education utilizing the potential power of personal influence and the need to reduce cognitive dissonance. Research on these techniques might profitably be applied to problems in preventing or reducing cigarette smoking in teen-agers and

adults, in weight reduction programs and in the prevention of automobile accidents.

Implications

The foregoing brief review suggests a key research question. Can more imaginative use be made of communications approaches to increase their power to persuade? Combinations of mass communications approaches and personal influence techniques, using emotional appeals with specified subgroups, might pay far greater dividends in modifying health beliefs and behavior than has yet been obtained with the sole use of any one approach.

In the light of traditional difficulties in modifying opinion and behavior of adults, an interesting note is that the two reported successful efforts to modify health behavior through the use of emotional appeals were both performed on children.^{38,44} Also, Guskin's successful effort to change positions on the health beliefs of the model was performed on children.³⁷ Unusual opportunities apparently exist in primary and secondary education to influence children both to develop desirable health habits and to acquire desired health beliefs. Curricula could be planned to emphasize the value of specific health habits and to provide rewards for performing them. Other possibilities would be to build on theories of the natural causation of disease and germ theory and to deal specifically with the topics of susceptibility to various diseases, with the personal and social consequences of unchecked disease and with approaches to the prevention, early detection and control of diseases. Much could be done in this process to lay the basis for later minimizing in the adult the psychological barriers to accepting an otherwise beneficial service.

To some extent school systems have approached some of these goals through their increasing emphasis on health, science and physical education. Unquestionably, relatively younger groups and better educated groups more often exhibit preventive health behavior than do older or poorly educated groups. Similarly, they more often exhibit related health beliefs. Yet, few systematic efforts have been made to develop curricula specifically and explicitly to stimulate the acquisition of desired health beliefs. Such systematic efforts should be planned on an experimental basis to determine the extent to which school health programs can exert a significant and lasting effect on the acquisition of health beliefs and behavior.

Summary and Conclusions

Only a beginning has been made toward a systematic explanation of health and illness behavior. Many studies of the utilization of preventive and treatment services, while valuable for formulating public policy, do not throw light on the determinants of behavior. On the other hand, recent sociological research is demonstrating that health decision making is best thought of as a process in which the individual moves through each of a series of stages or phases. Events occurring at any of these stages influence choices at subsequent stages. Even such research is currently limited to explaining circumscribed aspects of health behavior.

A specific model to account for personal health decisions that are made in the absence of clear-cut symptoms shows promise of providing a means of explaining preventive health behavior. The model hypothesizes that a decision to obtain a preventive or detection test in the absence of symptoms will not be made unless the following conditions are satisfied:

1. The individual is psychologically ready to take action relative to a particular health condition. The extent of readiness to act is defined by whether the individual feels susceptible to the condition in question and the extent to which its possible occurrence is viewed as having serious personal consequences.
2. The individual believes that the preventive or test in question is both feasible and appropriate for him to use, would reduce either his perceived susceptibility to or the perceived severity of the health condition and no serious psychological barriers to the proposed action are present.
3. A cue or stimulus occurs to trigger the response.

The strengths of the model are that it has appeared adequate to account for major variations in behavior in groups of individuals studied in a variety of settings, is composed of a small number of elements, and appears to be capable of application to a wide variety of health actions and beliefs. The dimensions included in the model are, at least in principle, capable of change through education.

Some defects have appeared in the model to date. Experimental manipulation of the variables has not been undertaken to any marked extent,

data are lacking on the role of cues in explaining health behavior, many of the studies which lend support to the model were based on small and possibly non-representative samples, a number of supporting studies were necessarily done retrospectively although the model implies a prospective design, operational definitions of the model's concepts have not been uniform, the variables have not yet been quantified beyond the nominal scale and the stability of the beliefs and reliability of the measures are not known.

In short, considerable research is still needed to demonstrate the model's true explanatory value. However, evidence to date justifies continued support of such research.

Since health decisions are determined by a variety of personal, interpersonal and situational factors, attempts to induce people to change their health actions may successfully be undertaken at various points in the decision process. Efforts to minimize barriers to action, to maximize convenience and to provide intensive cues to action are believed to increase public acceptance of health programs. However, after all such attempts have been made, a group will remain which is not psychologically ready to act and which will, therefore, not respond to cues to seek health services. For that group persuasive efforts will need to be focused directly on their beliefs or their behavior.

The beliefs identified in the model (as well as the use of associated preventive health measures) are not distributed equally in the population. The beliefs and the behavior tend more to be exhibited by upper socioeconomic groups than by lower. Educational programs designed to increase the acceptance of the beliefs as well as the adoption of preventive health behavior should be directed primarily to the poorly educated, to those of lower income and to non-white groups. However, the very groups to be reached tend, through a process of self-selection, not to expose themselves to scientific and health information transmitted through the mass media. Also, the mass media have not been notably effective in changing existing beliefs and behavior, although sufficient research has not been done in health contexts. More emphasis should be placed on methods that employ personal influence in face-to-face contacts, an approach which is widely held to be effective in educating members of the affected groups, though very little relevant research evidence can be cited. Some new approaches described might be used in enhancing the effects of group discussion techniques. Moreover, research and demonstration are needed to determine the extent to which school health programs can

exert a significant and lasting effect on the acquisition of health beliefs and behavior.

The critical review presented in this paper suggests a need for research on the following unsolved problems.

With respect to the explanatory model, more evidence, especially experimental evidence, is needed on the validity and relative contributions of each of the model variables to personal health decision making, including data on the importance of cues. Operational definitions of each of the model variables are needed which are related to the concepts covered, which correlate with criterion measures of behavior, which can be measured reliably, and which are quantified on at least an ordinal scale.

With respect to the problem of inducing behavioral change, research on mass communication and personal influence methods needs to be extended to determine the principles by which individuals, especially those in lower socioeconomic groups can be persuaded to alter their health opinions, attitudes and behavior. More extensive research in health settings is needed to resolve inconsistencies which can be experimentally induced between beliefs and behavior. Recent research suggests the desirability of more intensive study of the role of emotionally arousing factors in education and on the conditions which increase the effects of emotionally arousing messages upon attitude and behavior change.

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