

Health Promotion and the Knowledge-Attitude-Behavior Continuum

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Influencing health behavior through informational campaigns, followed by the expectation of attitude change and subsequent desired behavior changes, is examined. Prior literature in this area indicates that the correlations between information level and overt behavior or between attitude and overt behavior are generally positive though low. Two major approaches to improving the relationships between knowledge, attitude, and behavior are discussed: (a) the approach taken by M. Fishbein and his associates, which argues for the use of measures of behavior intention rather than generalized attitudes, and (b) the approach of W. J. McGuire and other proponents of an information-processing model, which argues that moving between the elements of the knowledge-attitude-behavior continuum demands processing time on the part of individuals and attention to a set of elements within a communication matrix. The five central elements of the communication process—source, message, channel, receiver, destination—and the independent variables involved are examined. The information-processing model is seen as particularly appropriate to health promotion campaigns and is recommended for further careful study in health promotion situations. © 1986 Academic Press, Inc.

INTRODUCTION

Two beliefs have characterized many of the health promotion campaigns conducted in the United States. The first belief is that if people are just given "the facts," they will behave in ways that accord with those facts. Thus, health education campaigns have been conducted under the premise that if people know, for example, that smoking causes lung cancer and that obesity is linked with heart disease, people will stop smoking and lose weight. The second belief held about health promotion is that if people can be induced to hold favorable or unfavorable "attitudes" about a particular practice, they will change their behaviors to fit the attitudes. This belief says that if persuasive materials intended to create a negative attitude about smoking are presented to an individual, the adoption of the negative attitude will lead the individual to stop smoking.

Although both of these beliefs do seem to underlie many health promotion campaigns, we shall see that the research evidence does not fully justify blind belief in the efficacy of presenting just the facts or in the importance of attitudes to health promotion. After a brief examination of the history of the knowledge-attitude-behavior continuum, we look at a set of variables and persuasive communication techniques that may give promise of improving the linkage between overt behavior and variables such as information level and attitude.

THE CLASSIC MODEL

Allport (1) presented the classic model linking information and attitudes with

overt behavior. The model postulated that (a) people acquire information about a behavior, which leads to (b) the development of a predisposition to respond (an attitude), which, in turn, leads to (c) behavior that is in agreement with the attitude. The model could be tested by looking at the relationship between information and attitude or between attitude and behavior. Presumably, any high correlation for either test would indicate support for the general model. The easy relationship to test is that between attitudes and behavior, since one does not need to spend a long period of time presenting a subject with information, waiting for an attitude to develop, and then observing behavior. One need merely send a persuasive message that attempts to induce some attitude, and then observe whether appropriate behaviors follow.

The model seems simple, but problems developed early. One central problem identified in the mid-1930s, and which still affects attitude research today, is how to define an *attitude*. One major school of thought defined attitudes as measures of an "intent to behave," that is, as clearly indicating a predisposition to respond in a particular way. The Bogardus Social Distance Scale (7) was an early measure that attempted to follow this model. But psychologists such as Thurstone (44, 45), Likert (30), Guttman (18), and Osgood (38) all adopted instruments that attempted to tap the degree of *affect* or *feeling* that someone might hold toward an attitude object. An instrument that attempted to measure attitude defined as affect would ask questions about how *much* you liked smoking, how *strongly* you felt about smoking, whether you *enjoyed* smoking, and similar measures of your feeling about smoking.

Why this clear split in attempting to define and use attitudes as predictors of behavior? One reason for the difference in defining the term attitude was probably a realization of the "contamination" that occurs in a research design that attempts to use behavioral intention as the operational definition of attitude. In a typical pre- and postmeasure design, the experimenter would first ask the subjects whether it was their "intention" to stop smoking. Then some message advocating quitting smoking would be presented, and following reception of that message, a post-test measure would be taken to see whether the subjects actually did quit smoking. Obviously, the premeasure that directly asked subjects whether or not they were going to stop smoking can be expected to have a direct and contaminating effect on the experiment as a whole. That was one of the reasons why many behavioral researchers turned to a definition of attitude that stressed affect or liking as a measure of attitude. Asking a subject in a premeasure situation whether the subject liked tobacco as one of a series of similar questions about various attitude objects was seen as far less likely to contaminate an experiment than a situation where attitude was defined as behavioral intention.

The classic model is still with us today. What has more than 50 years of research shown us about the relationships among knowledge, attitude, and behavior? The simple answer is to conclude that these relationships are positive, but very small. One of the very early attitude studies—a study reported in almost every beginning textbook on social psychology—illustrates the general conclusion. In 1934, LaPiere (29) had a Chinese couple visit a number of hotels and ask for accommodations. They were almost never refused accommodation. Later,

LaPiere wrote to the same hotels and asked whether the hotel would refuse accommodations to orientals. Most of the hotels wrote and said that they would *not* rent rooms to orientals. This study is an early forerunner of the frustration felt by many researchers in the half century following LaPiere's study. Attitudes and behavior do not seem to be very closely related.

Schuman and Johnson (41) gave the general conclusion that "attitudes and behavior are related to an extent that ranges from small to moderate in degree." They suggested that the only exceptions to this general conclusion are "cheating in school and interracial buyer-seller transactions where correlations are very low and voting—where they are high." Wicker (48) put it more bluntly when he concluded that attitudes are more than likely to be unrelated to behavior.

This brief review of the classic knowledge-attitude-behavior model gives little comfort to health promotion advocates, who have traditionally believed that if people can be given accurate information and if people will change attitudes, people will stop doing unhealthful things to themselves and will start doing healthful things. In the next sections of this article, we separate health promotion campaigns from other kinds of knowledge, attitude, behavior studies, and look specifically at the effectiveness of health campaigns conducted through use of the mass media and research designs and variables that may give promise of increasing our ability to affect health promotion objectives.

MASS MEDIA CAMPAIGNS

In recent years, there has been interest in using the mass media as a vehicle to conduct health promotion campaigns. In this section, we ask whether the belief that the mass media are powerful tools of persuasion is justified. Can we use the mass media to give people information and expect subsequent changes in their health behaviors?

Before examining recent mass media campaigns, some statement about the scope of this article is needed. The term "mass media" has been attached to many different ways of communicating with large numbers of people. Radio, television, and newspapers are the mass media that most people think of and these three channels of communication have been referred to by Schramm (40) as the "big" media. However, there are many other media that reach large numbers of people and are among those channels that Schramm would call "little" media. These include magazines, billboards, leaflets, newsletters, house organs, pamphlets, and other ways that sources use to reach audiences that cannot easily be reached by television. In this article, we largely confine our examination of the effects of the media to the "big" media, typically used in national campaigns. Few studies have assessed the use of the "little" media, although careful use of such channels may well be very effective in reaching specific, limited target audiences.

Most mass media campaigns involving health education or health promotion activities have goals or objectives such as those listed in Table 1. Obviously, there are many specific examples other than those cited that could be mentioned, but most health promotion campaigns seem to have one or more of these five kinds of objectives as their base. Frequently, campaigns have aimed at combinations of

TABLE I
OBJECTIVES OF HEALTH PROMOTION CAMPAIGNS

Objective	Example
1. Avoid behavior	Teenage "Don't Start Smoking" campaign
2. Maintain behavior	"Adults Need Calcium Too" as basis for promotion of milk drinking for adults
3. Increase behavior	"You need fiber every day, not just once in a while"
4. Change behavior	"Stop Smoking" campaign
5. Adopt new behavior	"Get a Pap Smear Once a Year" campaign

objectives. For example, a campaign directed at teenagers that asks them to stop smoking if they have started and to avoid starting if they do not yet smoke would be such a campaign, as would one that asks women to get a yearly Pap smear and practice breast self-examination once a month.

Most health promotion campaigns are based on the assumption that if people are given factual information, they will be able to make changes in their health behaviors. Thus, a stop smoking campaign might concentrate on the link between smoking and lung cancer or that between smoking and heart disease. Sometimes, only factual information is presented, and readers or listeners are left to draw their own conclusions as to the desirability of making a change in their own health behaviors. In other campaigns, not only is information presented, but the desired conclusion is also given. The message might be, "Scientists have established that smoking increases your risk of lung cancer. Stop now, and reduce that risk."

In recent years, more and more health promotion campaigns have been based on attempts to change attitudes, presumably operating under the assumption that a change in attitudes will lead to a desired change in behavior. Thus, we have the famous Brooke Shields campaign, in which Brooke appears with cigarettes in her ears and says that smoking is dirty and decidedly not a cool thing to do. The hope is that teenagers who look up to Brooke Shields as a role model will adopt her negative attitudes toward smoking and behave accordingly. In this kind of health promotion effort, the fact that smoking is linked to cancer and heart disease is irrelevant to the campaign. Presumably, the teenager receiving the message will not be worried about a cancer that might occur 30 years in the future, but will be worried about the ways in which peers might perceive teenage smoking at this present time.

Campaign Results

What can we say about the results of health promotion campaigns conducted via the mass media? Flay (15) points out that one of the difficulties assessing the usefulness of the mass media lies in the fact that relatively few such campaigns have been successfully studied. There have been thousands of such campaigns conducted in the last 40 years, but only a few have been systematically analyzed. In addition, methodological differences between studies make it difficult to compare results. Even a cursory look at those studies that have been reported shows

that the campaigns under study are probably not representative of the great bulk of mass media campaigns.

The severe limitations of the studies that have been made prevent drawing conclusions with great confidence. Some conclusions, however, seem to be agreed upon by most researchers that have examined the available data on mass media health campaigns.

(a) Few campaigns have shown strong, lasting effects on health behavior. This conclusion has been reached by almost every researcher who has looked at mass media campaigns. Atkin (2, 3) examined health promotion campaigns in a number of different areas, including drug use, smoking, and alcohol use. He reported that few lasting changes seem to have been made by recipients of the public service "spots" used as the basis of most campaigns. Flay (15) has made perhaps the most comprehensive examination of research on general health, cardiovascular health, smoking, alcohol and drug abuse, safety, cancer control, etc. He concluded that of the campaigns that have been successfully evaluated, "most have been unsuccessful in influencing attitudes and behavior for any length of time."

It might be that there actually have been a number of highly successful campaigns that simply have never been studied, but that seems unlikely. One would expect that a campaign designed to be carefully evaluated would have received the benefit of the best available advice on campaign strategy—better advice than might have been given to any of the thousands of mass media campaigns that have been conducted by organizations and groups and never evaluated. Thus, the general conclusions that mass media health promotion campaigns seldom show strong, lasting effects seems justified.

(b) Weak positive effects are very likely. Despite the fact that few campaigns show strong positive effects, it is encouraging to note that few, if any, of the evaluated mass media campaigns show negative effects. Many do show weak positive effects. People seem to show an increase in knowledge level about the particular health problem under consideration, although their knowledge may not be persistent, i.e., it tends to show the typical learning curve decline found in most educational campaigns. Anecdotally, many people report short-term changes in attitude and behavior, although the emphasis should be placed on the short-term aspects of such self-reports. All of us have been accustomed to hearing people say, "I have stopped smoking hundreds of times," or "I saw that show on TV the other night and decided to go on a diet again." Greenberg and Gantz (17) report that the knowledge level of people viewing a show about venereal disease (VD) increased sharply and that visits to VD clinics also increased sharply immediately following the airing of the show. The National Cancer Institute has funded a series of Cancer Information System (CIS) outlets. CIS is a network of telephone hotlines which citizens may call for information. One consistent finding is that the volume of calls rises sharply whenever the mass media report that cancer has been found in a major public figure, e.g., Betty Ford and President Ronald Reagan. Here again, the effects seem to be short term. The volume of calls soon returns to normal levels. In brief, while there do seem to be short-term effects, most observers tend to feel that such effects are transitory for most of the affected population.

It should be noted that, in part, the question as to whether there are significant direct effects of mass media campaigns may be a question of definition. Mendelsohn (37), for example, argues that we should be satisfied with small percentages of people reporting either attitude or behavior changes, because across the entire population, such small effects would actually affect large numbers of people. Atkin (2) summarizes the criticism to the Mendelsohn position by saying that those "holding the null effects perspective tend to interpret small changes (e.g., less than 10% of the variance) as trivial, and therefore conclude that the media are impotent."

Clearly, if one moves from a "percentage" view of the world to a "numbers" view of the world, some impressive results would be reported. In a nation of 230 million people, a campaign that results in only 1% of the population changing some aspect of their behavior could result in a very significant impact on business and on local, state, and national budgets.

(c) Some mass media campaigns have reported significant behavior changes, including studies by Best (5), McAlister (31), Mendelsohn (37), and Warner (47). Flay (15) suggests that these and other campaigns reporting significant results also have special features that set them apart from other mass media campaigns. For example, the 1973 study by Mendelsohn (37) was a very special situation in which mass media were used for a lengthy television program on safe driving. The program posed different driving situations and asked audience members how they thought they would cope with the situation if they found it in reality. Viewers were then able to take the National Driver's Test and get their scores. Mendelsohn reported that the program attracted 30 million viewers and, more important, stimulated thousands of people to enroll in driver education programs. The nature of the mass media situation, however, was quite special. Newspapers cooperated with the program. Many local civic and education groups assisted in the program. The mass media messages were not the usual 30-sec or 1-min spots, but occupied the time usually taken by a prime-time program. Thus, this campaign cannot be compared with the normal mass media campaign.

Despite the few campaigns that have reported some lasting behavior changes as the result of a mass media campaign, the first conclusion we suggested—that the mass media alone are generally ineffective at changing health behaviors—is still the most accurate conclusion. This does not mean, however, that health promotion campaigns using the mass media should not be run. It is generally conceded by everyone who has reviewed evaluations of mass media campaigns that the campaigns have frequently been effective in gaining the attention of a target audience and in arousing the interest of target audiences (2, 4, 15, 27, 39). It is clearly important that any potential target audience become aware of the existence of a problem, and that audience members then become interested enough in the problem to want to seek further information or help or engage in further communication about the specific health promotion problem. If health promotion campaigns depend solely on the use of any of the "major" media for their results, it is unlikely that a large percentage of any target audience will actually modify their behavior.

We cannot expect that the presentation of either informational or persuasive messages over the mass media will result in dramatic increases in knowledge

level, attitude, or behavior. We can, however, identify variables that tend to either impede or facilitate mass media campaigns.

Countermessages. The presence of countermessages may dramatically affect a campaign. A Public Service Announcement (PSA) advocating a low-fat diet and appearing just before or just after a gourmet cooking show will certainly not be as effective as one seen in a context where there is no competing message. Alcohol advertising on television is aimed at getting viewers to believe that important people drink beer and wine. A PSA campaign asking for moderation in drinking will be less successful than one operating in an environment in which there are no competing messages.

Difficulty. The difficulty of the behavior being sought is a major variable. It was relatively easy for a person to take the National Driver's Test. It is far more difficult to get an individual who is 50 pounds overweight to lose the 50 pounds. To go on a very low-fat or very low-sodium diet is also a difficult behavior for people to adopt, even if the receivers of a mass media campaign acquire basic information and change their attitudes appropriately. The amount of effort required to find, identify, purchase, and prepare low-fat or low-sodium foods may make it unlikely that the average person will follow through on a mass media campaign even if he or she should decide that it is a good idea.

Addictive properties. The addictive properties of the individual's current health behavior patterns are important in considering the efficacy of a prospective mass media campaign. Even if an individual decides that it is important to stop a three pack per day smoking habit after seeing anti-smoking spots on television, it will be very difficult to do so. In addition to smoking, alcohol use, drug use, and even eating are other behaviors that have addicting properties. It is unlikely that without follow-up help, a mass media campaign alone will have much effect.

Social pressures. Social pressures may help to prevent change. The pressures on teenagers in certain social settings to smoke, use alcohol, or use drugs is strong enough to override any effect that mass media messages might have. This variable, however, has another side. If it can be mobilized, social pressure can be used to promote desired health behaviors. The Brooke Shields PSA referred to previously was an attempt to portray smoking as a behavior that was not approved by teenagers. Thus, teenagers who did smoke could expect (if they believed the PSA) to have social pressures applied to them as soon as they tried to light up a cigarette. Two other campaigns based on the use of social pressure to induce behavior change are the Driving While Intoxicated Program and the High Blood Pressure Education Program for blacks. The Driving While Intoxicated Program has emphasized the theme "Friends don't let friends drive drunk" while the High Blood Pressure Program has focused on the theme "Do it for those you love." There is, unfortunately, little evidence as to the precise role that social pressures might have played in these or other mass media campaigns. It has been suggested that perhaps some of the overall decline in cigarette smoking in the United States can be attributed to social pressures, that is, to pressures from people who believe that smoking is objectionable and that those who smoke should be socially ostracized in some way.

The brief examination we have made of health promotion campaigns that have

been conducted using the mass media as channels of communication must be concluded by stating that, as they have typically been conducted, health promotion campaigns provide little support for the classic model. Variables such as the difficulty of the task or the addicting properties of the change being contemplated may explain some of the lack of relationship among knowledge, attitude, and overt behavior, but most researchers have concluded that we must search further if we are to be able to make adequate predictions about overt behavior.

IMPROVING THE CLASSIC MODEL

Despite the low correlations that have been established among knowledge, attitude, and behavior as a result of mass media campaign evaluations, there is still a basic belief that the classic model is an appropriate statement of the manner in which people come to acquire certain overt behaviors. Therefore, scholars have spent considerable time trying to “tinker” with the classic model to improve correlations. The improvements suggested fall into two major areas: (a) suggestions designed to improve research design and methodology for mass media campaigns, and (b) suggestions for changes that might improve the actual conduct of campaigns. Below, we examine these areas as they pertain to health promotion campaigns.

Research Designs and Methods

Several researchers have addressed the problems that come with rigorous evaluation of behavioral campaigns. They have argued that perhaps the relationships between presenting informational messages and subsequent behavior or between presenting persuasive messages and subsequent behavior can be strengthened by changing the research model that is used to evaluate health promotion campaigns (or any campaign in which behavior modifications are desired). The central proponent of changes in the way the research model is applied is Martin Fishbein (12–14), and several workers have expanded on his ideas (10, 42, 46). What Fishbein and his followers point out is that while generalized attitudes toward attitude objects—like smoking or drug use—are not good predictors of subsequent behavior, it is possible to ascertain the subject’s attitude toward a *set* of potential behaviors. This set of attitudes can be called *behavioral intentions*, that is, a set of predispositions to actually perform one possible behavior over another.

Fishbein and his followers argue that attitudes will predict behaviors best when one has attitude measures of all possible behaviors that a subject can take, and one can then use those data in a predictive model. McPhee and Cushman (36) summarize the argument by saying: “[A]ttitudes should predict behaviors best under conditions of high *correspondence*—the elements constituting attitude and behavior should be the same, and should be defined at the same level of specificity, for highest correlations to appear empirically” (p. 9). McPhee and Cushman go on to point out that there is an impressive amount of evidence to support the Fishbein position.

What does this mean for health promotion campaigns? Let us look at a typical health promotion problem and ask how the classic model would study the problem and how Fishbein might handle the same issues. Imagine that we are

interested in beginning a mass media campaign designed to reduce the number of heavy smokers in some high-risk target population. In a typical evaluation scheme, we would obtain from a sample attitude measures of their feelings of like or dislike toward smoking, lung cancer, heart problems, and other possible consequences of smoking. Then we would proceed to present information designed to convince the audience that smoking is related to lung cancer and other adverse medical consequences. Our hope is that the target population will absorb the information, become negative toward smoking, and attempt to quit. The past history of such campaigns suggests that we are not likely to get very many respondents who actually quit smoking. Fishbein and Ajzen (14) suggest that we consider behaviors to be like any other attitude object. Thus, we would first ask ourselves what behaviors might be possible for an individual who has become convinced that smoking causes lung cancer. It is easy to think of a number of behaviors other than the intended one of stopping smoking. The individual might cut down on the level of smoking, switch from cigarettes to cigars or a pipe, switch from high-tar to low-tar cigarettes, decide that the latency period is long, and thus that stopping immediately is not necessary, or take many other possible actions short of actually stopping smoking. If our only measure of success is actually stopping smoking, we would judge the campaign to be a failure. If we have asked our subjects what their actual attitudes are toward the whole range of possible behaviors, we should improve the size of the correlations between prior attitude and subsequent behavior. In other words, using only a generalized attitude measure is not likely to produce high correlations, while making predictions based on receivers' attitudes toward the whole range of possible behaviors should succeed.

The obvious practical objection to Fishbein's approach might be stated something like: "I am not interested in having an individual start to smoke cigars, but only in having the individual stop smoking cigarettes. This approach doesn't seem helpful in health promotion research." Fishbein's probable answer to this objection brings us back to the belief mentioned at the beginning of this article. It is not enough to simply give people the facts. If you want people to respond in one and only one way as a result of a health promotion message, messages that stress that there is only one acceptable response must accompany any presentation of factual information to a respondent. If such persuasive messages do not accompany factual messages, it is quite possible to achieve changed attitudes, but the receiver will apply those attitudes to a whole range of possible behaviors that could accompany any particular fact.

One can predict with some accuracy what kinds of behaviors are most likely to follow from a health information campaign. Again using the example of the anti-smoking campaign mentioned above, we can rank the range of potential behaviors in terms of the variables we discussed earlier—(a) the presence of countermessages, (b) level of difficulty, (c) addicting properties, and (d) social pressures. The individual is most likely to take an action, therefore, that corresponds with countermessages contemporaneously available, that is easy to accomplish, that will not affect the current addiction the receiver has, and that will correspond with the social pressures the individual feels. Thus, the best prediction we can

make is that the individual will reduce the number of cigarettes smoked or will switch to low-tar cigarettes. The least likely behavior for the individual to take is to stop smoking completely. Why? (a) All of the countermessages presently available to receivers in the print media emphasize smoking in moderation and smoking low-tar and -nicotine cigarettes; (b) stopping smoking is the most difficult behavior to perform; (c) reducing the number of cigarettes smoked or changing brands to a low-tar brand is easier than quitting smoking; and (d) whatever social pressures there are to stop smoking can be reduced by announcing that one has cut down or switched brands.

We have looked at the work of Fishbein and his associates in very simplified form. It seems obvious, however, that if closer attention were paid to the suggestions both for improving the measurement model and for improving the manner in which information is linked to desired behavior during a health promotion campaign, we might improve health promotion activities.

Conducting Health Promotion Campaigns

McGuire (32, 35) has been the most influential social scientist in insisting that the problem with the knowledge, attitude, behavior continuum is not the theoretic model, but the way in which the model is typically applied in real-life situations. The alternative approach suggested has been termed the information-processing model and stems from the early work of Carl Hovland and his associates at Yale (21–23). Following this early work, McGuire pointed out that whether acquisition of a particular piece of information will lead to some desired behavior is dependent, in part, on whether the information has been appropriately “processed” by a receiver. McGuire argues that the knowledge, attitude, behavior continuum can best be studied in a “matrix of persuasive communication.” He suggests that we consider there to be five independent variables, corresponding to the five central elements of the communication process: *source*, *message*, *channel*, *receiver*, and *destination*. On the dependent variable axis of the matrix, McGuire argues that attitude change can be regarded “as a stochastic process which involves at least five behavioral steps, including *attention*, *comprehension*, *yielding*, *retention*, and *action*” (32).

How is the matrix related to health promotion campaigns? McGuire would argue that we typically measure the effectiveness of a campaign immediately at the end of the time that we have spent presenting the message. We attempt to ascertain whether there is verbal agreement with the message. If the subject has not had time to process the messages through the five steps, or if the message actually has been ineffective and the action step is not going to be taken, the campaign will not have been a success, although we may get indications of immediate verbal agreement. We may use the five elements of the persuasion matrix to ask whether changes in any of the independent variables will improve our chances of obtaining attitude change and subsequent behavior change.

Source. A wealth of evidence suggests that the source of any message is an important determinant of who will attend to the message, how much of the message will be understood by the audience members, how much will be retained, and whether there will be yielding and subsequent behavior change by any of the

audience members. Kelman (26) suggests that the influence of the source comes from any or all of three characteristics of sources: credibility, attractiveness, and power. Very few health promotion campaigns have systematically measured any of these characteristics before selecting a source to be responsible for the presentation of health promotion messages. We select the Surgeon General of the United States as a spokesperson and assume that the person occupying that position will be seen as credible, or we select Brooke Shields as a spokesperson because we assume that she will be seen as an attractive role model for a teenage target audience. Seldom do we ever test to see how audiences similar to our target audience actually view the people we have selected as sources. We might dramatically improve health promotion campaigns if we were to do so.

Message variables. There are literally hundreds of ways in which a basic idea can be presented to an audience. The source can use pictures, diagrams, charts, jingles, or straight print. The source can surround the basic message with persuasive appeals or present it in a simple didactic fashion. Which ways are actually used to present the message may play a vital role in whether the message is going to be received, listened to, understood, or responded to. The level of language used may prevent some audience members from understanding enough of the message to respond even if there were a predisposition to do so.

There are many different message variables that may be of assistance in designing a health promotion campaign. Here, we can mention only a few of the message strategies that seem potentially useful to the design of health messages:

(a) Frequency of message. There is a large body of literature dealing with the question of the number of times a message should be presented to have maximum effect on an audience (43). While the number of repetitions needed for maximum effectiveness will vary with the complexity of the material, the presence of distractions, the educational level of the receivers, and similar variables, the best evidence suggests that a minimum of three times is needed for most mass media messages to have maximum effect. Clearly the health promotion campaign cannot hope to be successful if it is not possible to repeat messages often enough for all of the audience members to have a chance of attending to the message more than once.

(b) The nature of the appeal that is made in the message. Persuasive messages frequently attempt to appeal to human motives, both basic and learned, as a basis for response. Thus, one might argue that an individual should lose weight because the person will be more attractive, or that someone should stop smoking because he or she will smell better. The motive being appealed to is the desire to have the approval of others. Many motives—fear, hunger, thirst, patriotism, self-esteem, etc.—can be used.

Fear appeals have been among the most frequently used motives in constructing persuasive messages. Early research by Janis and Feshbach (25) suggested that using high levels of fear might be counterproductive in a health communication situation (brushing teeth). Recent research on the use of fear appeals provides a more optimistic outlook for this technique. Studies suggest that the use of high levels of fear appeal in health promotion messages may be effective if the receivers have high levels of esteem. Furthermore, the recent research suggests

that fear appeals are more likely to be effective if there are specific actions that individuals can take after being exposed to a message and if the recommendations for future action are very specific. To use an example from the advertising world, one might use fear appeals with upper-middle-class teenagers by suggesting that getting acne will have serious effects on their social life. If the message is concluded by telling the receiver that the problem can be corrected by buying a particular facial lotion and using it every day, the probability is enhanced that the message will be persuasive.

What is important to note is that appeals can make a difference in the way a message is received. Various appeals should be systematically pretested for effectiveness before a campaign is begun.

(c) "Foot-in-the-door" strategy. "Foot-in-the-door" is the name that has been given to a message strategy studied in the past few years (6, 8). Essentially, the technique suggests that a receiver not be asked to stop smoking all at once or not be asked to lose 50 pounds in a short period of time. The request is likely to seem so unreasonable to a receiver that it will be refused. Rather, the technique advocates making a small, reasonable request of the receiver. Receivers might be asked to cut down by two cigarettes a day or simply to eliminate sugar from their coffee. The notion is that this modest request is so easy that it will be easy for a receiver to comply; then, a series of subsequent requests can be made to finally achieve a complete weight loss or a complete cessation of smoking.

At least two campaigns that use the foot-in-the-door technique have been conducted. Both the Participation campaign in Canada and the Life: Be In It campaign conducted in Australia encouraged individuals to be active at whatever level suited them. The assumption behind the messages was that if individuals would try some simple activities first, they would become more and more interested and would extend their range of activity.

(d) "Door-in-the-face strategy. "Door-in-the-face" is the title given to a message strategy that suggests making a very large demand of a receiver following the presentation of an informational message (8). One might present information about the dangers of smoking and then demand that receivers quit smoking immediately if they are to become healthy. The strategy suggests that few people will be able to comply with such a large, unreasonable demand, and most will refuse the request. The first demand is then followed by a more reasonable, lesser request. For example, the subject might then be asked to start by eliminating all cigarettes after a meal. The strategy suggests that the receiver will feel some guilt about refusing the first, very large demand and will then be more likely to comply with the second, more reasonable request.

While the door-in-the-face strategy has been used in a number of interpersonal communication situations, there have been no mass media campaigns to utilize it. Yet, it should be quite possible to design a campaign that outlines a set of actions that people might take to improve their health, and to present that set of actions in terms of declining complexity of the action required.

Regardless of the nature of the appeal that one might think appropriate to a health education campaign, the best advice is to conduct systematic pretests in which persuasive materials are "copytested" before there is any attempt to use

them in a health education campaign. That is, any potential messages being considered for use should be tested on small groups of receivers, selected for their similarity to the larger audience. Until very recently, there were few examples of health promotion campaigns in which the time and effort had been taken to systematically copytest any set of messages used in a campaign designed for subsequent evaluation. We can dramatically improve our results by doing so.

Channel variables. Once a source has been selected and a basic message designed, it is essential to select the channel or channels over which the message will be presented. Each of the major channels that can be identified in a modern mass media campaign has very distinct characteristics that may promote or inhibit eventual reception of the message. For example, the audience for newspapers tends to be better educated than the audience for television. The audience for monthly magazines is likely to be better educated than the audience for daily newspapers. Television may reach far more people than newspapers, but it is far more difficult (and more expensive) to explain a complex health issue on television than it is in a newspaper or in a face-to-face situation with a respondent. Various researchers (2, 15, 32) have examined the effectiveness of utilizing the mass media trying to influence the same audience through face-to-face efforts. The comparison is between *mediated* channels of communication and *nonmediated* channels of communication. Mediated channels are those in which there is some separation in distance or time between source and receivers—for example, television, radio, or newspapers. Nonmediated channels are those in which a source has direct contact with receivers and is not separated by distance or time from the receiver. Most reviewers would support the conclusion that the mediated channels can be highly effective in arousing the attention of an audience, achieving some interest in a particular problem, and helping to set a social agenda for societies. Nonmediated situations, for example, a physician delivering health messages in an office setting, are more effective for delivering complex information, delivering intense persuasive messages, and inducing complex behavior changes.

This latter comparison between the mass media and other kinds of communication situations is an important point to note for health communication. There are a few examples where a mass media health promotion campaign has been systematically followed by an attempt at interpersonal face-to-face contact with audience members. Two examples in recent years are the Stanford Three-Community Study, where one of the interventions included exposure of a high-risk sample to mass media plus intensive counseling, and the current smoking prevention program being conducted by Dr. Brian Flay in Los Angeles, where the procedure has been reversed and children are given personal sessions about smoking and then exposed to a mass media campaign. These examples are not the rule. In most health promotion efforts, either a mass media campaign is run or some kind of face-to-face intervention, such as a schoolroom-based campaign, is used. Seldom are the two combined. Prior research would suggest that we might dramatically improve our results if we were to combine the use of mass media and face-to-face approaches.

Receiver variables. It has long been recognized that there are individual differ-

ences among receivers of communication that may result in differential learning, attitude change, or behavior. Some of these differences are easy to recognize. Because people have different educational levels, they will read and understand materials at different levels. An individual with little mathematical ability may not be able to understand and respond to a complex article on risk factors. Some people are more persuasible than others, and will thus respond more completely to persuasive messages than will other subjects.

The typical health promotion campaign does not normally take individual differences into account; The same message is presented to every receiver. If the campaign is to be a mass media campaign, the PSA or other message is designed to be understood by the largest proportion of the available population. In some cases, this results in the particular members of the audience who are at highest risk becoming those least likely to receive, understand, or respond to the message. Careful consideration of individual differences in messages will have to be given if maximum impact is to occur.

A second variable that McGuire suggests (32) is the participation of receivers in the communication process. He suggests that research from learning theory showing that people learn better if they are actively involved in the learning process is also applicable to the knowledge, attitude, behavior continuum. If our health promotion campaigns can be designed actually to give the participant something to do while learning, the campaign has a better chance of success. The participant might be asked to keep a food diary, to keep track of exactly when the desire for a cigarette comes, or to weigh out and record the amount of fiber consumed each day. None of these tasks are essential to losing weight, stopping smoking, or changing diet. Each of them, however, is designed to let the receiver be active in achieving a health promotion goal. The campaign involving the National Driver's Test is an example in which the receivers were asked to participate. In recent years, a number of local television stations sponsoring smoking cessation programs have attempted to involve viewers in the process by suggesting activities that could be done immediately following the broadcast. Although these kinds of programs have been conducted, there is insufficient evidence as to the efficacy of the technique. Evaluations have not attempted to look at this variable separately from the overall success of the campaign.

Destination variables. Little attention has been paid to the behavior of individuals once the health promotion campaign is over. Normally, there is a post-test measure of some sort, usually administered shortly after the PSAs have been on the air for a few weeks, and a conclusion as to the campaign's effectiveness is made. More rarely, there is a delayed follow-up measure, administered a few months after the end of the campaign. McGuire (32) suggests that careful attention must be paid to the period of time following an intervention if we are not to lose all of the gains a campaign may have made. Cherrington and Miller (9) found that attitude change induced by a persuasive message decays to approximately the 50% level in 6 months. Dietrich (11) and McGuire (35a) argue for a faster rate of decline, perhaps to 40% after 6 weeks. Regardless of the specific figure, it is obvious that there is significant regression following almost any health promotion campaign. People who have actually stopped smoking start again, and Flay (15)

reports that the decrement may be almost complete for very heavy smokers. Having people induced to take off weight is easy. Having them keep it off for long periods of time is extremely difficult.

Does this discouraging fact mean that we should cease our health promotion efforts? One possible answer is that we should design campaigns with formal follow-up over long periods of time. The smoker may need intervention at periodic intervals for several years after initially stopping smoking. The obese person who does manage to lose 50 pounds and is then discharged from a physician's care should probably be followed systematically for 5 or even 10 years with periodic check-ups and materials designed to promote maintenance activities. At the beginning of this article, we indicated that there could be a number of goals to any health promotion campaign. The message we design, the appeals we use, and the sources we select to promote an intervention designed to get an individual to stop smoking may not be adequate to have the individual continue to maintain the nonsmoking behavior.

Again, little attention has been paid to follow-up activities in health promotion campaigns. We need systematic study of appropriate interventions that might be successful in maintaining behavior, once changed, or of inducing behavior that is not now being practiced.

The information-processing model has become the dominant approach used by many social scientists to study attitude and behavior change. It does not deny the knowledge, attitude, behavior continuum, but it does attempt to specify the conditions under which links between informational messages, persuasive messages, and desired behavior might be expected to occur. It is seen in this article as particularly appropriate to health promotion campaigns and recommended for careful further study in health promotion situations.

CONCLUSION

This article has attempted to look at the question of whether health behavior can be induced through informational campaigns, followed by the expectation of attitude change and subsequent desired behavior changes. The prior literature indicates that the correlations between information level and overt behavior or between attitude and overt behavior are generally positive, but small. Two major approaches to improving the relationships among knowledge, attitude, and behavior were discussed; the approach taken by Fishbein and his associates, which argues for the use of measures of behavior intention rather than generalized attitude, and the approach of McGuire and other proponents of an information-processing model, which argues that moving between the elements of the knowledge, attitude, behavior continuum demands processing time on the part of individuals, and attention to a set of elements within a communication matrix.

REFERENCES

1. Allport, G. Attitudes, in "A Handbook of Social Psychology" (C. Murchinson, Ed.), pp. 798-844. Clark Univ. Press, Worcester, Mass., 1935.
2. Atkin, C. Mass media information campaign effectiveness, in "Public Communication Campaigns" (R. Rice and W. Paisley, pp. 265-313. Eds.), Sage, Beverly Hills, Calif., 1981.

3. Atkin, C. Research evidence on mass mediated health communication campaigns, in "Communication Yearbook III" (D. Nimmo, Ed.), pp. 665-668. Transaction Books, New Brunswick, N.J., 1979.
4. Bauer, R. The obstinate audience: The influence process from the point of view of social communication. *Amer. Psychol.* 19, 319-328 (1964).
5. Best, J. A. Mass media, self management and smoking modification, in "Behavioral Medicine: Changing Health Lifestyles" (P. O. Davidson, and S. M. Davidson, Eds.). Brunner/Mazel New York, 1980.
6. Bettinghaus, E. P., and Cody, M. "Persuasive Communication," 4th ed. Holt, Rinehart and Winston, New York, 1986.
7. Bogardus, E. S. Measuring social distance. *J. Appl. Psychol.* 9, 299-308 (1925).
8. Burgoon, M., and Bettinghaus, E. P. Persuasive message strategies, in "Persuasion: New Directions in Theory and Research" (M. E. Roloff and G. R. Miller, Eds.), pp. 141-169. Sage, Beverly Hills, Calif., 1980.
9. Cherrington, B. M., and Miller, L. W. Changes in attitude as a result of lecture and of reading similar material. *J. Soc. Psychol.* 4, 479-487 (1933).
10. Cushman, D., and McPhee, R. D. "Message-Attitude-Behavior Relationship." Academic Press, New York, 1980.
11. Dietrich, J. E. The relative effectiveness of two modes of radio delivery in influencing attitudes. *Speech Monogr.* 13, 58-65 (1946).
12. Fishbein, M. Attitude and the prediction of behavior, in "Readings in Attitude Theory and Measurement (M. Fishbein, Ed.), pp. 477-490. Wiley, New York, 1967.
13. Fishbein, M. The prediction of behavior from attitudinal variables, in "Advances in Communication Research" (C. D. Mortenson and K. K. Sereno, Eds.), pp. 3-31. Harper & Row, New York, 1967.
14. Fishbein, M., and Ajzen, I. "Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research." Addison-Wesley, Reading, Mass., 1975.
15. Flay, B. R. On improving the chances of mass media health promotion programs causing meaningful changes in behavior, in "Health Education by Television and Radio" (M. Meyer, Ed.). Saur, Munich, 1981.
16. Flay, B. R., and Best, J. A. Overcoming design problems in evaluating health behavior programs. *Eval. Health Professions* 5(1), 43-69 (1982).
- 16a. Flay, B. R., Johnson, C. A., Hansen, W. B., Ulene, A., Grossman, L. M., Alvarez, L., Sobol, D. F., Hochstein, G., and Sobel, J. L. Evaluation of a mass media enhanced smoking prevention and cessation program, in "Experimental Research in TV Instruction" (J. P. Baggaley and J. Sharpe, Eds.), Vol. 5. Concordia University, Montreal.
17. Greenberg, B., and Gantz, W. Public television and taboo topics: The impact of VD blues. *Public Telecommun. Rev.* 4, 59-64 (1976).
18. Guttman, L. The problem of attitude and opinion measurement, in "Measurement and Prediction" (S. A. Stouffer, Ed.), pp. 60-90. Princeton Univ. Press, Princeton, N.J., 1950.
19. Hovland, C. I. Effects of the mass media of communication, in "Handbook of Social Psychology" (G. Lindzey, Ed.), Vol. 2, pp. 1062-1103. Addison-Wesley, Cambridge, Mass., 1954.
20. Hovland, C. I., et. al. "Order of Presentation in Persuasion." Yale Univ. Press, New Haven, Conn., 1957.
21. Hovland, C. I., and Janis, I. L. "Personality and Persuasibility." Yale Univ. Press, New Haven, Conn., 1959.
22. Hovland, C. I., Janis, I. L., and Kelley, H. H. "Communication and Persuasion." Yale Univ. Press, New Haven, Conn., 1953.
23. Hovland, C. I., Lumsdaine, A. A., and Sheffield, F. D. "Experiments on Mass Communication." Princeton Univ. Press, Princeton, N.J., 1949.
24. Hovland, C. I., and Rosenberg, M. J., Eds. "Attitude Organization and Change." Yale Univ. Press, New Haven, Conn., 1960.
25. Janis, I. L., and Feshback, S. Effects of fear-arousing communications. *J. Abnorm. Soc. Psychol.* 48, 78-92. (1953).
26. Kelman, H. C. Processes of opinion change. *Public Opinion Q.* 25, 57-78 (1961).
27. Klapper, J. R. "Effects of Mass Communication." Free Press, Glencoe, Ill., 1960.

28. Krugmann, H. E. The impact of television: Learning without involvement. *Public Opinion Q.* 29, 349–356 (1965).
29. LaPiere, R. T. Attitudes vs. actions. *Soc. Forces* 13, 230–237 (1934).
30. Likert, R. A. Technique for the measurement of attitudes. *Arch. Psychol. (N.Y.)* 140. (1932).
31. McAlister, A. "Toward the Mass Communication of Behavioral Counseling." Doctoral dissertation. Stanford University, 1976.
32. McGuire, W. J. The nature of attitudes and attitude change, in, "Handbook of Social Psychology" (G. Lindzey and E. Aronson, (Eds.), Vol. 3, 2nd ed., pp. 136–314. Addison–Wesley, Reading, Mass., 1969.
33. McGuire, W. J. Attitude change: The information processing paradigm, in "Experimental Social Psychology" (C. G. McClintock, Ed.). Holt, Rinehart and Winston, New York, 1972.
34. McGuire, W. J. Communication—persuasion models for drug education, in "Research on Methods and Programs of Drug Education" (M. Goodstadt, Ed.). Addiction Research Foundation, Toronto, 1974.
35. McGuire, W. J. Theoretical foundations of campaigns, in "Public Communication Campaigns" (R. D. Rice and W. Paisley, Eds.). Sage, Beverly Hills, Calif., 1979.
- 35a. McGuire, W. Order of presentation as a factor in 'conditioning' persuasiveness, in "Order of Presentation in Persuasion" (C. I. Hovland Ed.), pp. 98–114. Yale University Press. New Haven, 1957.
36. McPhee, R. D., and Cushman, D. P. Attitudes, behaviors, and messages: An introductory overview, in "Message–Attitude–Behavior Relationship" (D. P. Cushman and R. D. McPhee, Eds.), pp. 1–41 Academic Press, New York, 1980.
37. Mendelsohn, H. Some reasons why information campaigns can succeed. *Public Opinion Q.* 37, 50–61 (1973).
38. Osgood, C. E., Suci, G. J., and Tannenbaum, P. H. "The Measurement of Meaning." Univ. of Illinois Press, Urbana, 1957.
39. Robertson, L. S. The great seat belt campaign flop. *J. Commun.* 26, 41–45 (1976).
40. Schramm, W. "Big Media Little Media: Tools and Technology for Instruction." Sage, Los Angeles, 1977.
41. Schuman, H., and Johnson, M. P. Attitudes and behavior. *Annu. Rev. Sociol.* 2, 161–207 (1976).
42. Seibold, D. R., and Roper, R. E. Psychosocial determinants of health care intentions: Test of the Triandis and Fishbein models, in "Communication Yearbook III" (D. Nimmo, Ed.), pp. 625–668. Transaction Books, New Brunswick, N.J., 1979.
43. Stewart, J. B. "Repetitive Advertising in Newspapers: A Study in Two New Products." Harvard Business School, Boston, 1964.
44. Thurstone, L. L. Theory of attitude measurement. *Psychol. Bull.* 36, 222–241 (1929).
45. Thurstone, L. L., and Chave, E. J. "The Measurement of Attitude." Univ. of Chicago Press, Chicago, 1929.
46. Triandis, H. C. "Attitudes and Attitude Change." Wiley, New York, 1971.
47. Warner, E. The effects of the anti-smoking campaign on cigarette consumption. *Amer. J. Public Health* 67, 645–650 (1977).
48. Wicker, A. Attitude vs. actions: The relationship of verbal and overt behavioral responses to attitude objects. *J. Soc. Issues* 25, 41–78 (1969).
49. Wicker, A. An examination of the "other variables" explanation of attitude–behavior inconsistency. *J. Pers. Soc. Psychol.* 19, 18–30 (1971).