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# Public Response to Various Written Appeals to Participate in Health Screening

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HEALTH SERVICES patterns and utilization have received considerable attention (1), but few systematic studies have been done to determine how people are informed of the availability of services and what they need to do to receive them. Although countless campaigns and educational programs have been undertaken to persuade people to obtain a health service or to act in a recommended way, systematic comparisons that relate the effectiveness of health communications to the message content or to the communication medium used in the program are seldom reported.

Educators have recognized the need for using communications to reach target populations (2) and have elaborated various techniques for mass educational programs. Nevertheless, selection of such techniques has tended to be ad hoc and not based on any established theory of communication.

In typical studies (3-5), the media mentioned by the target population as sources of information are taken as a measure of the program's effectiveness, although in some research, study subjects and control subjects have been compared. Usually those conducting a health education program will "flood the channels" in an effort to reach as wide an audience as possible (6).

## Threat Versus Positive Appeal

The field of marketing has rejected or made little use of threat appeals, largely because of a single early study showing that a high-threat message yielded less belief

and behavior change than a low-threat message (7). Use of threat in persuasive health communications, however, has been a focus of research and discussion for a number of years, and the literature on the subject has been reviewed in detail (8-10). The bulk of more recent research had indicated that the arousal of fear is positively related to intended changes in attitudes and behavior, but any generalization drawn from this research must be qualified because of inconsistencies in results. Furthermore, most of the studies were done on limited study groups or in highly artificial settings, and little of the work has been related to personal characteristics of the subjects.

Since many researchers regard fear as having motivating properties, threat is an obvious choice for one type of appeal in educational programs. Rarely, however, has its effectiveness been compared with that of other types of appeal, although in several in-

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vestigations recommendations accompanied both with and without a threat have been evaluated (10). Evans and associates have compared the effects on junior high school students of a fear-arousing message about dental health versus a message emphasizing a positive health theme (11). They found that the positive appeal yielded a significantly greater change in dental behavior, although the high-threat appeal was more effective than a simple presentation of recommendations. Their research suggested that we might usefully compare the effectiveness of a positive health appeal with that of a threat appeal.

### Characteristics of Study Populations

The health concerns and health behavior of a population are related to the personal characteristics of its members. Women typically exhibit greater involvement than men in health matters (12,13-15) and generally show higher utilization of health measures (16,17), including preventive procedures. Whenever cost is a factor in utilization, preventive health measures show a strong relationship to socioeconomic status, especially education (18). The relationship of health beliefs and behavior to age is not clear. According to a national study, the beliefs that people hold about a series of diseases are not consistently associated with age (14). Haefner and associates, however, found that younger persons tended to report preventive actions more frequently than older persons (16). In reviewing the research on compliance with medical recommendations, Davis mentions that there is a curvilinear relationship between compliance with such recommendations and age, the highest levels of compliance being found in the middle age group (19). Gross utilization of medical services generally increases with age (1), although Kasl and Cobb cite evidence showing that the young have higher participation rates for free screening programs than older persons (17). Thus, women and people with more education might be expected to respond better to preventive health appeals, but it is not clear what other characteristics would yield relationships. The research literature provides little basis for predicting how the themes of, or kinds of, appeals might interact with other characteristics of the target population.

Plainly, more attention needs to be directed at establishing a conceptual basis for the communication process that will guide the construction and dissemination of messages. Such a framework should include principles relating message content, sources, and media to differences among people in the way they assimilate information from their environment. As Swinehart has pointed out (12), we need to identify the personal characteristics that affect people's exposure to, and acceptance of, health messages. To establish such a conceptual basis and identify the relevant characteristics, different communications methods and messages have to be tested, and we decided to conduct such a test.

### Setting of Study and Procedures

An opportunity for us to study message themes presented itself when, in November 1972, a large public hospital serving a metropolitan area added a screening clinic to its outpatient facility. A true experiment was not possible, however, since we were unable to begin the study until 4 months after the new clinic opened. Thus, a patched-up study design had to be used (20).

The new unit of the outpatient facility was to provide multiphasic screening to the facility's outpatient population. Among others, patients who had not had a workup within a year and who were judged physically able to be screened were invited to participate. The screening was voluntary, and a charge, graded by family income and family size, was made for the service (maximum fee \$55).

From November 1972 through February 1973, each eligible patient received a letter and brochure from the new clinic. These first, or original, materials were designed by the new clinic's staff and made no specific appeal to the patient that he or she should be screened. They simply mentioned the service and the kinds of tests available, stating that the testing "might spot illness that you don't know you have...and prevent more serious disease." Information was also included on how to prepare for the testing, the location of the clinic, and the phone number to call for an appointment. These original materials served as the baseline with which we compared the other approaches used in the study.

The other approaches consisted of a threat form of message and a positive form, which we prepared. Starting in March 1972 and continuing into April, one or the other of these two experimental messages was sent to each eligible new patient attending other clinics of the outpatient facility. Since the names of the patients to whom the messages were sent were obtained serially as they attended the other clinics, the experimental messages were sent in batches, the threat forms and the positive forms being used in alternate weeks.

In both the threat approach and the positive approach, a brochure and a letter of the same length and with the same amount of material as in the original mailings were sent, accompanied by the same instructions. One set of the new materials emphasized that screening was a way to cope with the threat of disease and that serious illness could develop without a person's awareness, although conditions might be detected and treated if discovered early. Specific mention was made of heart disease, cancer, blindness, and so on. The second set of new materials, identical in format, focused on positive health and on screening as a way to stay healthy and avoid needless worry; no mention was made of specific conditions. The three sets of materials—original, threat, and positive—constituted the independent variables of the study. Excerpts from the initial paragraphs of the three brochures follow.

**ORIGINAL MESSAGE:** What is a Comprehensive Care Clinic? It is a place where many tests are done to discover disease conditions that you may have without knowing it. Many more tests, at much lower cost, can be done for you at this clinic than at a doctor's office or at a regular outpatient clinic visit. These tests may spot illness that you don't know you have, that can be treated and often prevent future, more serious disease.

**THREAT MESSAGE:** How's your health? You may be feeling fine, but that doesn't guarantee that you are really healthy. Many people have serious diseases before they know anything is wrong. Our new clinic gives medical tests to find hidden disease. The tests measure a number of important things about your health.

By testing, these diseases or warning signs can be found early—at a time when effective treatment can be given. If early signs of disease go undetected, they can lead to very serious results—hospitalization, financial loss, pain, or even worse.

**POSITIVE MESSAGE:** How's your health? Everyone wants good health and our new clinic can help you stay healthy. The Comprehensive Care Clinic offers you a series of preventive health tests as an easy way for you to be sure that you have a thorough checkup. And checkups never hurt.

By testing, early signs of possible future trouble can be detected. If there is a problem, it can be treated early—the best way to keep small problems from becoming big ones. A checkup can take away needless worry and help assure continued good health in the future.

In addition, some patients received two mailings of material at different times. Those whose names had originally been drawn in December 1972 and who had been sent the original communication but had failed to call for an appointment were sent the original mailing again in February 1973. Patients whose names had been drawn during January and February 1973 and had received the original materials were sent one or the other of the new sets of materials as well in March or April 1973. Mail recruitment was terminated in mid-April 1973 because of uncertainties about the future of the clinic, but the termination did not affect the screening of the study patients.

The following summary of mailings shows the types of messages sent the patients according to their time of recruitment from one of the clinics of the outpatient facility:

Type of message	Time of recruitment
1st mailing:	
Original .....	November 1972–February 1973
Threat .....	1st and 3d weeks of March 1973 and 1st week of April 1973.
Positive .....	2d and 4th weeks of March 1973 and 2d week of April .

2nd mailing:

Original .....	December 1972
Threat .....	Half of January and of February 1973
Positive .....	Half of January and of February 1973

Records were kept of all appointments made for screening and of all visits made for this purpose. From records on the entire group of outpatients, information was available as to the age, sex, race, and marital status of the patients who were sent the messages about the new clinic. We could thus determine which patients had made appointments and which patients had kept them and classify each patient with respect to several personal characteristics. Unfortunately, information regarding educational level and income was not available. No uniform record of patient income was kept during much of the study period. When, however, a later sample of patients at the clinic was asked to report family income, half of those patients reported that their annual income was less than \$4,000.

## Results

Many more persons (1,083) received the original letter and the pamphlet inviting participation in the screening clinic than received the subsequent experimental messages (218). As the table shows, of patients receiving the original materials, some 32.1 percent called the clinic subsequently and were given appointments. Of the persons who made appointments, 59.8 percent actually appeared for screening; for some of these, more than one appointment had to be made before they showed up. Thus, the original communication yielded a screening rate of about one in five, but created some scheduling problems, since 40 percent of the persons with appointments never came in.

The response to the two new sets of materials differed. Of those receiving the threat communication, 27.3 percent made appointments, of whom 69.4 percent kept them and were screened (see table). Thus, the screening rate for those receiving the threat message was 18.9 percent. The threatening materials proved no more effective than the original messages in inducing patients to make appointments. And although the appointment-keeping rate for those receiving the threatening message was higher than for those receiving the original message, the difference was not statistically significant. Of those receiving the positive communication, however, 36.0 percent made appointments, of whom 90.3 percent kept them. Thus, the screening rate for the recipients of the positive message was 32.6 per-

Percentage of recipients of messages making and keeping appointments, by type of message and sex

Type of message	Number of recipients	Made appointments			Made and kept appointments		
		Women	Men	Total	Women	Men	Total
Original .....	1,083	33.7	25.3	32.1	21.8	13.4	19.2
Threat .....	132	27.4	27.0	27.3	17.9	21.6	18.9
Positive .....	86	40.7	25.9	36.0	37.3	22.2	32.6

cent. The rates of making appointments did not differ significantly according to the type of message the patients received, but the positive communication was significantly more effective than either the original message or the threat version both in terms of appointment-keeping and screening yield.

The second mailings resulted in few additional screenings. Only 4.8 percent of the 483 recipients of any type of second message were screened. Remailings of the original message drew only a 2.7 percent response. The new messages did not do significantly better—a 4.3 percent response for the positive message and a 6.5 percent response for the threat.

The question of the comparability of the groups receiving the three letters must be raised, especially in view of the patched-up study design. We therefore compared the groups in terms of the available demographic information, that is, by age, sex, race, and marital status. The composition of the groups did not differ in sex, race, or marital status, but an age difference was observed. The groups receiving the new letters tended to be younger. Apparently this difference was simply a function of which patients came to the clinic over time. To determine, however, if it affected the results reported in the preceding paragraphs, we standardized the age distributions for the three types of communications and computed new screening scores based on these adjusted distributions. Since younger people as a whole responded somewhat less well to all the messages, this procedure yielded a slight increase in the effectiveness of the new messages, but the change was far from significant. In short, demographic differences among the groups receiving the various communications neither produced nor masked the differences in their responses. Given these results, it is unlikely that socioeconomic differences among the groups could account for the differences in their responses.

In terms of making an appointment, the response to the original letter was associated with sex; as the table shows, women were more likely to make an appointment than men (33.7 percent versus 25.3 percent). The same type of sex difference was present in respect to the positive letter; 40.7 percent of the women versus 25.9 percent of the men receiving it made appointments. The difference, however, did not reach statistical significance in its own right because of the small number of persons. No sex difference was found for the response to the threat letter. Marital status and race were not related to the making of appointments for any of the three types of letters.

In terms of appointment-keeping, women were significantly more likely than men to appear for appointments in response to the original letter: 64.7 percent of the women receiving the original message appeared, compared with 52.9 percent of the men (see table). Further, appointment-keeping was lower for the younger age groups; half of the patients under 40 kept appointments, as compared with 65 percent of those

over 40. These age differences were not observed in the response to the new letters, although the age trend was there for the threat letter; even so, 65.5 percent of those under 40 receiving the threat letter kept appointments.

Given these results for appointment-making and appointment-keeping by recipients of the original message, we can state that women were significantly more likely to be screened than men, and that both men and women over 40 years of age were more likely to be screened than those under 40. The sex difference of course may simply reflect a difference in access to the clinic, which was open only on weekdays during working hours. Except for a notable difference between the proportions of women and men obtaining screening as a result of the positive message (37.2 percent of female recipients versus 22.2 percent of male), no relationships between personal characteristics and the acceptance of screening were found for the new messages. The improvement in screening observed for the positive version of the new message was attributable to its appeal to the younger age group and to women. Each of the new messages tended to yield more screened men than the original letter did.

The low level of response to second letters precluded the possibility of finding relationships between the appointments made and the personal characteristics of those receiving two letters. The group receiving a second message was composed of disproportionate numbers of men and younger persons (under 40 years) as compared with the group receiving the original letter, since those two subgroups were less likely to have responded to the original message. It is likely that economic factors entered into the response.

Because the various types of letters were not mailed at the same time, but in successive periods, the time of year could have been a factor in the making and keeping of appointments. Neither the appointment-making nor appointment-keeping of those receiving the original letter, however, proved to be related to the time of their recruitment. Furthermore, since the assignment of patients to receive each of the new messages was essentially random, the differences in responses could hardly have been due to any systematic biasing factor.

## Discussion

The improvement in appointment-keeping in response to the new messages probably reflects the greater clarity of these messages. The original letter was vague, and according to clinic personnel, many of the recipients seemed to have understood only that they were to call the clinic. On doing so, they may have been given appointments for a service they had not intended to obtain. The new letters seemed to give a clearer explanation of the reason a patient should call. We thus attribute a part of the improved appointment-keeping to the specificity of the instructions in the new messages (21).

Clearly, women exhibited a greater readiness to take advantage of the clinic service, both in making and

keeping appointments. What needs to be explained is why the positive letter was much more effective for women than either the original letter or the threat version. If we assume that women generally have a greater concern about health, as seems plausible in the light of previous research (12,13-15), the positive message may have given them a strong incentive for channeling their concern in a way that did not arouse negative feelings. The threat message, in contrast, may have cued fears that went beyond the level of concern needed for constructive action. This explanation is consistent with other evidence that threats arouse greater fear in women than in men (15,22). It is based on the assumptions that fear may facilitate action up to some level, after which it becomes a negative factor (9). On the other hand, our results suggest that both the threat and the positive theme, as compared with the original message, improved the responses of men, but not dramatically. Perhaps appeals arousing any type of health motivation would be moderately effective with men, given their much lower level of concern about health matters.

For younger people, the positive message yielded a higher screening rate than either the original or the threat message. Since younger people may well have less concern about the diseases for which screening is appropriate (23), their readiness to avoid disease through screening may be low. Themes emphasizing disease threats may seem inappropriate and remote. The positive message, however, with its emphasis on good health, apparently provided younger people with a useful incentive. To our knowledge, this age-related result has not been reported previously and needs to be replicated.

The low level of response to the second letters is difficult to explain. Apparently the decision not to respond to the initial message represented a decision which a second message of the same general form could not alter. This result suggests that repeating a message will have little impact on those whose initial motivation is low (15). The better response that we achieved with a followup mailing in which new letters were used, as compared with repeating the original message, is consistent with such an interpretation.

Our explanations of the results are, of course, tentative. They stem from a perspective which emphasizes that a person's motivational and belief dispositions are activated or suppressed by the content of the message. The results support the view that health communications can profitably be tailored to particular audiences, whose readiness to act varies. We would not conclude, for example, that threat appeals are always ineffective, but rather that there are sets of conditions under which a threat is more or less effective. The hypotheses about appeals need to be tested more widely in order to specify what these conditions are in terms of various actions, various groups, various settings, and so on. Such specification is needed as a basis for health communications.

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