Predictors of Innovative Behavior Among Local Health Officers

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RECENT surveys show that, despite continued encouragement by leaders of the profession, many local health departments have failed to adopt important new programs needed to meet changing health needs (*1–4*). An imposing time lag exists between disclosure and application of new public health knowledge, a lag which deprives the public of many benefits of medical research. The Public Health Service has estimated (*5*) that "failure to use new findings results each year in 88,000 unnecessary deaths from cancer, 20,000 deaths from rheumatic heart disease, and needless suffering of countless victims of other ailments."

This study attempted to identify attitudes and other characteristics of health officers that might be related to "innovativeness"—the extent to which a health officer undertakes innovations earlier than his colleagues (*6*). Attitudes and characteristics of local health officers in three States were correlated with their times of adoption of two health programs. It was hypothesized that a health officer's attitudes toward his profession, role, and scope of legitimate activity, and his opinion of the community would be related to whether he was an early or late adopter or perhaps had not yet accepted the innovation.

Attitudes are persistent personal orientations toward the environment. They develop over time and are potentially mutable. Findings linking specific orientations to innovative behavior carry implications for modifications in recruitment, training, and other circumstances surrounding the health officer which might increase the likelihood of earlier acceptance of new programs.

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Attitude Measures

Six dimensions of attitudes were examined: cosmopolitanism, ideology, activism, community progressiveness, community willingness to innovate, and political orientation.

Merton (*7*) has popularized the terms "local" and "cosmopolitan" to distinguish between a person interested mainly in his own community's affairs and one oriented more strongly toward society beyond his community. While the cosmopolite health officer aims to attain professional goals and seeks the approval of his professional colleagues, the localite is oriented toward his own department and places greater value on approval of his staff and the local community (*8*).

The cosmopolitan looks outside his group for new ideas and learns of innovations before the

local; further, because he is oriented to professional goals, the cosmopolitan is more likely to adopt programs advocated by public health leaders. Thus, cosmopolitanism is seen as a predictor of the early innovators.

A 19-question scale was constructed to measure degree of cosmopolitanism, including 12 questions developed and employed by Gouldner (*9*) and modified for relevance to public health. For most items, the respondent was asked to indicate (on a 5-point scale from "strongly agree" to "strongly disagree") his feelings toward statements such as the following:

It is unfortunate, but true, that there are really very few people in this community with whom one can share his professional interests.

While both are important, it is really *more* important to me to have the admiration of the people in my community than to have the respect of my fellow health officers.

On balance, I think that I would, in general, prefer to be the health officer of a relatively small-sized community where I could get to know many of the people.

I think that it is very important for a health officer to contribute to the advancement of basic public health knowledge.

I have few contacts with community influentials other than on the official level.

The scale also included several items relating to professional activity, such as number of papers published or presented at professional meetings during the past 5 years.

In an attempt to assess motivation to innovate in public health, Mohr (*10*) designed two measures: an "ideology" scale, based on questions measuring the health officer's opinions concerning the local health department's "proper" scope of services, and an "activism" score, based on such characteristics as the health officer's willingness to fight for support for public health measures, to seek funding beyond his local area, to seek out health problems in the community, and so forth. Both scales were employed in the current research, and their relationships to time of adoption of the programs calculated.

Because his position is appointive, and oriented toward treating a "public" rather than an individual patient (*11*), the local health officer may be expected to be politically sensitive to the demands of the community. Cognizance of the political nature and "representational role" (*12*) of the public health administrator, as well as evidence that norms relevant to adoption of innovations vary among geographic areas (*13*), led to the expectation that a health officer's perceptions concerning the degree of his community's progressiveness and willingness to undertake both health and other civic innovations would be associated with the time at which he adopted the program. Personal estimates rather than direct data on area norms were sought in the questionnaire because of the supposition that the respondent behaves according to his subjective picture of his community, regardless of the objective realities of the situation. The concern, then, was with the health officer's view of his community's norms, and the possible association between this attitude and his adoptive behavior, rather than with the accuracy of his opinion.

The health officer was given a 5-point scale on which to rate his community's general progressiveness; he was then asked to select one of four categories to describe the community's readiness to plan and innovate:

Generally innovative on health matters, and also generally innovative about other community matters.

Generally innovative on health matters, but hesitant to be innovative about other community matters.

Generally *not* innovative on health matters, but otherwise generally innovative about other community matters.

Generally *not* innovative either in health matters or in other community matters.

These categories are a modified version of a "citizen's readiness" typology developed by Agger and Goldstein (*14*).

Finally, respondents were asked whether, in their political thinking, they considered themselves to be liberal, middle-of-the-road, or conservative. It was hypothesized that health officers with a relatively liberal orientation would be more likely to favor a health department's participation in a wide scope of health services and hence be more likely to initiate change and additions in their own agencies than would their more conservative colleagues.

Methods

Data were collected in March, April, and May 1967 by a combination of mailed self-administered questionnaires (attitude scales) and a followup telephone interview (to ascertain times of program adoption and gather demographic and background information). All health officers in the three States were asked to participate; of 103 potential respondents, 95 completed

both questionnaires and interviews, a response rate of approximately 92 percent for the study.

Two pretest series were conducted in areas outside the study States. The first, involving seven face-to-face interviews with both medical and nonmedical health officers, led to several major revisions in the questionnaire. The second series tested the mail-telephone method of data collection. A comparison of the two techniques indicated that the mail-telephone combination was no less effective and far more efficient than the face-to-face interview.

Time of adoption was established as a composite of a series of dates, from the time of initial consideration of the program by the health officer to the time that the innovation was actually introduced. This information was supplemented (when possible) by annual reports, correspondence, and the recollections of staff closely concerned with the innovation.

Public health programs were selected as the unit of innovation (as opposed, for example, to new methods of providing old services) because programs may be assumed to produce more substantial change in the health department itself. Five "expert judges" (persons who are now or were local health officers with substantial professional reputations) rated 18 public health programs as to likelihood of ease of adoption. This dimension, termed "adoptive potential," included estimates of such factors as the extent to which each program "is of obvious practical value in the minds of most professionals in the field," "represents a major departure from traditional public health activity," and "might be supported or opposed by the majority of interested groups in the community." On the basis of these ratings, "measles immunizations" was taken as a program with high adoptive potential (HAP), while "screening for diabetes" was used as the program with low adoptive potential (LAP). However, in one State, measles immunization programs are required by law, and "topical fluoride application" was substituted as the program with high potential for adoption. This selection technique helped to assure that findings based on the two study programs may be generalized to other programs with similar likelihoods of acceptance.

In instances where the health department had adopted the program before the present health officer took office, the respondent was dropped from the analysis.

Because examination of the frequency distributions for the study variables indicated that parametric statistics were inappropriate, the nonparametric Goodman-Kruskal gamma was employed instead of the more popular Pearson coefficient. As with the Pearson coefficient, gamma is a correlation coefficient that varies between -1 (perfect negative association) and $+1$ (perfect positive association).

Results

Table 1 presents data on the degree of association between various attitude measures employed in the study and health officers' times of adoption of the two programs. All scales were

Table 1. Relationships (gamma coefficients) between health officers' scores on six attitude measures and time of adoption of each study program

Attitude measure	Program with high potential for adoption		Program with low potential for adoption	
	Number of health officers [1]	Gamma coefficient	Number of health officers [1]	Gamma coefficient
Cosmopolitanism scale	81	0.463	85	0.357
Mohr ideology scale	81	.390	85	.327
Mohr activism scale	81	.313	85	.400
Community progressiveness scale	80	.364	84	.262
Community willingness to innovate scale	81	.311	85	.402
Political orientation scale	79	.642	83	.524

[1] If the department had adopted the program before the current health director took office, the respondent was dropped from the analysis; therefore the numbers are less than 95.

NOTE: All coefficients significant at $P<0.05$.

observed to have some predictive power, and all relationships were significant below the 0.05 level.

The stronger a health officer's orientation toward his profession and professional goals, the more likely was his early acceptance of new public health programs. However, cosmopolitanism was a better predictor of time of adoption of programs which have a relatively high likelihood of general acceptance within the health officer community. Further analysis revealed that the lower correlation in the LAP innovation case was due to the presence of "pioneers" (defined arbitrarily as the first two adopters of each innovation in each State) who had low cosmopolitanism scores, a finding that fits well with sociological theory concerning the orientations of persons who are first to undertake less popular innovations (*6*). When these LAP-innovation pioneers are removed from the analysis, the correlation rises to the HAP-innovation level.

Similarly, the broader the scope of activities envisioned by the health officer as appropriate to a health department, the earlier his adoption of the study innovations. The ideology scale scores, however, were somewhat poorer predictors of time of acceptance than was cosmopolitanism. But, with Mohr's activism scale, an interesting reversal occurred; activism was more highly associated with early adoption of LAP than of HAP innovations. Since activism is a measure of the extent to which a health officer attempts to manipulate his environment to gain support for his health plans and programs, this finding indicates that those persons who express a greater willingness to fight are likely to be earlier adopters of less popular programs.

In considering relationships between both community progressiveness and willingness to innovate and time of adoption, there would appear to be a possibility for reverse causality. One may speculate that a health officer who is innovative will perceive his community as progressive and ready to innovate, while a laggard will blame his community for his failure to adopt new programs. Clearly, in a paradigm relating individual innovativeness to community progressiveness, two cells represent dissonant situations: the health officer is innovative and the community is not; the health officer is not innovative and the community is. The danger of biased responses lies in the possible desire of the respondent to reduce this dissonance by announcing a view of his community's progressiveness that will match his own activities.

Anecdotal evidence obtained both during the pretests and in the study suggested that health officers were able to view themselves as progressive and their communities as conservative; comments such as "this place is very conservative, and I have to constantly fight for the new programs I know we need" were common. The second dissonant situation, in which a noninnovative respondent views his community as progressive, may be ameliorated because the health officer will answer in terms of his own perception of himself as an innovator, which is not necessarily correlated with this study's objective measure of innovativeness. Thus, it would probably not be uncommon for a person, found to be noninnovative by this study, to nonetheless perceive himself as progressive, and such an individual would not incur dissonance in reporting his community to be progressive. However, such instances would reduce severely correlations between time of adoption and both community progressiveness and readiness-to-innovate estimates.

It is clear from table 1 that perceived community progressiveness was a better predictor of time of adoption of the HAP innovation, while community willingness to innovate was most highly associated with adoption of the LAP program. Further examination of the tables from which these correlations were generated revealed this difference to be due largely to the responses of the HAP and LAP pioneers. While pioneers of both innovations tended to rate the progressiveness and willingness to innovate of their communities higher than did the remaining respondents, LAP pioneers gave substantially higher ratings to their community's willingness to innovate than did HAP pioneers; in fact, each LAP pioneer gave his community the highest possible rating.

It is unusual that a measure based on a single question should yield the substantial correlations obtained in the replies concerning political orientation. Relative liberalness of the health officer was a good predictor of when he under-

took new programs relative to his peers. Since the responses represent general self-perceptions, it may be that the relatively high correlations occurred because the question tapped some attitudinal dimension or Weltanschauung far broader than the political realm. Since advocacy of change is a signalizing feature of the term "liberal," such persons might be expected to look to their profession and outside their local communities for information concerning change in their field and would hold general attitudes favoring change. To check this, the gamma for the relationship between political orientation and cosmopolitanism was computed for 93 respondents and found to be 0.515.

Discussion

If attitudes affect innovativeness, it would seem desirable to explore some of the background characteristics that might adhere to persons with different attitudinal sets. At this point, "attitudes" change from independent to dependent variables. The usual demographic information was obtained, but variables more closely related to values and social structuring might be expected to make a greater contribution toward understanding why certain persons hold certain attitudes.

Table 2 presents the relationships between certain background variables and four of the attitude measures. For simplicity, those background variables that did not produce meaningful correlations with attitudes were excluded from the table; such variables included age, religion, length of time in private practice, time in the community, and number of positions held before the present one.

Generally, the cosmopolitan health officer traced his national ancestry (birthplace of mother) to central, southern, or eastern Europe. He graduated more recently from medical school, where he attained higher rank in his graduating class, tended to specialize, and went on to obtain more academic degrees than his less cosmopolitan peers. The health officer's philosophy concerning the proper scope of public health was strongly related to rank in his graduating class and additional academic degrees, but it was unaffected by year of graduation and whether or not he specialized. However, his class rank affected his activism to a lesser degree than it had his ideology, and number of degrees held became the best predictor of his willingness to fight for programs. Class rank was highly predictive of general political orientation, suggesting a connection between academic success and a willingness to accept or favor change.

Rank in medical school graduating class was, therefore, the best general indicator of "high" scores on attitude measures which, in turn, were predictors of innovativeness. Other indicators, in decreasing order of ability to predict, were degrees held beyond the baccalaureate, national

Table 2. Relationships (gamma coefficients) between selected background variables [1] and health officers' scores on four attitude measures

Attitude measure	National ancestry (N=92 [2])	Rank in medical graduating class (N=80)	Year of graduation from medical school (N=83)	Formerly general practitioner or specialist (N=66)	Degrees held beyond baccalaureate (N=95)
Cosmopolitanism scale	0.323	0.373	0.239	0.236	0.235
Mohr ideology scale	.301	.485	*.188*	*.098*	.392
Mohr activism scale	.277	.340	.256	*.108*	.396
Political orientation scale	.384	.737	.289	*.123*	[3].459

[1] To obtain positive correlations, the background variables were ordered against high-to-low attitude scores as follows: National ancestry (birthplace of mother)—central, southern, or eastern Europe and other; U.S.A.; western Europe. Rank in medical school graduating class—upper 5 percent, upper 25 percent, upper 50 percent, lower 50 percent. Year of graduation from medical school—most recent to earliest. Specialization—specialist, general practitioner. Degrees beyond baccalaureate—more to fewer.

[2] Since time of program adoption is not considered in this table, respondents previously dropped were included in the analysis. Numbers less than 95 are due to nonresponse; also 10 health officers were not physicians, and 19 physicians had never engaged in specialty or general practice.

[3] N=93.

NOTE: All coefficients significant at $P<0.05$ except those set in italics.

ancestry, year of graduation from medical school, and whether the health officer, if previously in practice, had been a specialist.

Summary

Surveys indicate that new programs needed to meet changing health requirements spread slowly through the health system. This study explored the usefulness of six attitude measures in predicting when (relative to their peers) health officers would undertake two kinds of public health programs. Findings showed that health officers who adopt new programs earlier generally tend, relative to their peers, to be more cosmopolitan; to define a broad area of services as legitimate activities for a health department; to express strong willingness actively to seek support from the environment for new programs; to view their communities as generally progressive and willing to innovate in health and other civic areas; and to express a general political orientation favoring change.

Additional analysis yielded five background variables related to the attitude measures. The best general predictors of attitudes related to innovativeness were rank in medical school graduating class and degrees held beyond the baccalaureate. The more usual demographic variables such as age and time in the community were not observed to be associated with the attitude measures to a statistically significant extent. In general, the results emphasize the importance of attempting to recruit recent, well-qualified graduates into public health and of providing them with opportunities for advanced public health training.

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Tearsheet Requests

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