Using cross--sectional surveys to plan message strategies

Robert Hornik [a] & Kimberly Duyck Woolf [b]

[a] Professor of Communication, and holds the Wilbur Schramm Chair in Communication and Health Policy at the Annenberg School for Communication, University of Pennsylvania

[b] Doctoral candidate at the Annenberg School for Communication, University of Pennsylvania

Available online: 28 Apr 2010

PLEASE SCROLL DOWN FOR ARTICLE

APPLICATIONS

SOCIAL MARKETING QUARTERLY

USING CROSS-SECTIONAL SURVEYS TO PLAN MESSAGE STRATEGIES

By Robert Hornik and Kimberly Duyck Woolf

INTRODUCTION

This paper identifies methods for using cross-sectional survey data to guide the design of the message strategies used in the communication component of a social marketing campaign. It divides the process into two stages: deciding on potential message strategies to incorporate them into a survey instrument and then analyzing the survey results to provide guidance for message strategy choice.

The analysis requires looking at the evidence to answer three questions:

- Are there many people with the 'wrong' views on the message-relevant belief?

- Is there substantial association between the belief and the outcome? and

- Is the belief one which an educational campaign might affect?

The paper presents three illustrative message strategies relevant to cigarette smoking among adolescents, then steps through the analysis of some example data and describes some possible conclusions. The paper concludes with an examination of the strengths and weaknesses of this approach.

There are many ways that empirical research can help guide the development of social marketing programs and their communication components. They can be used to define the target audience, to choose focus behaviors, to select among possible channels, to provide feedback as to day-to-day successes or failures of the program as well as to provide fundamen-

tal evaluation of long-term success. However, among the most important roles is assistance in the development of message strategies.

There are many ways that empirical research can help guide the development of social marketing programs and their communication components.

Cross-sectional surveys are one method for obtaining data to guide the message strategy development process. Other methods include use of focus groups, in-depth interviews, literature reviews, expert informants on the qualitative side, or formal laboratory or field experimentation on the quantitative side.

Mass communication projects operate at a distance from their audiences. This contrasts with conventional educational efforts. Teachers in a classroom can hear the questions, read confused expressions, and tailor their lessons to meet the needs of their students. If they choose, health workers in a clinic can ask their clients to repeat the recommendations for home treatment of a diarrheal episode, to see whether or not the clients have understood.

APPLICATIONS

Communication projects may reach much larger
audiences and often are able to assure higher fidelity of
core messages than classroom teachers or clinic staff.
However, they do not have such easy channels for
feedback from their audiences.

Communication projects may reach much
larger audiences and often are able
to assure higher fidelity of core messages
than classroom teachers or clinic staff.
However, they do not have such easy
channels for feedback from their audiences.
As a result, they have a special need for
research and evaluation, for use in
designing their messages.

We assume that program planners have
chosen a behavior and target audience and
are ready to define message strategy. By
message strategy, we refer to the essential
belief(s) that a message will be designed to
impart. It is not the same as the message
itself, which will be the product of a creative
process that will turn the strategy into a
specific realization – whether that is a
television ad, a printed booklet, or a radio
soap opera episode. The development of the
strategy is the intervening step between
choosing a focus behavior and message
creation. It will often be the meat of the
creative brief which producers will depend
upon to guide message production.

THE PROCEDURE

We find it useful to divide the process
of using cross-sectional surveys to assist
strategy development into two distinct
stages: the design of the survey, and
the analysis of the survey to make recom-
mendations of preferred strategies. The
design of the survey begins with the
development of hypotheses about factors
that might explain the behavior. Planners
can rely on available theory, on the best
advice of informants, on discussions with
groups representing the target audience –

or on their own judgment – and based on
these considerations, suggest a range of
possible causes that they think might
influence audience behavior.

For example, in this paper we use **desire
to stop smoking among 12th grade current
smokers** as the target outcome (we know
that the desire to stop smoking is highly
predictive of the behavior of frequently
trying to quit smoking). Some might
suggest that quitting cigarette smoking
among adolescents depends on their percep-
tion of the negative health consequences of
smoking. Others may argue that cigarette
smoking is a reflection of social expectations
from peers – individual use will vary with
perceived peer smoking. Still others might
suggest that overall attitude toward smok-
ing, knowledge about ways to quit smoking,
or perception of whether or not smokers are
perceived as 'cool' is crucial. The process of
generating this list is really a creative
process, as is hypothesis generation, usually.
There is no definitive way to know when the
list is finished, when all the important
potential explanations have been offered.
However, there are some useful guides for
generating possible candidate explanations.

There is a great deal of codified experi-
ence concerning likely determinants of
health behavior (for useful reviews see
Fishbein, Middlestadt, & Hitchcock, 1991;
Hornik, 1991; or Maibach & Parrott, 1995).
The categories these authors suggest
will stimulate useful speculation about
possible explanations for many types of
behaviors. One helpful empirical approach
is what Ajzen and Fishbein (1980) call
'elicitation research.' This process involves
questioning small samples of respondents.

APPLICATIONS

They are asked to describe what good and bad consequences are likely to accrue from engaging in a particular behavior and to list which of various influencers around them would expect them to perform or not perform the behavior. The most consistently mentioned consequences and influencers represent implicit hypotheses about what might influence the behavior, and would be added to the questionnaire.

However, the development of the list of hypotheses for a communication strategy is subject to a constraint that is not present in the usual listing of possible explanations for a behavior. These explanations must have clear implications for the development of a message strategy. Almost always, that constraint will mean that each explanation will touch on a respondent's beliefs or perceptions, since beliefs are the essence of what messages address (whether those beliefs are about the benefits or costs of a behavior, the expectations of others for the respondent's behavior, or the respondent's beliefs about him or herself vis-a-vis the behavior). As a contrasting example, even if parental education is a predictor of willingness to quit smoking, it has no obvious implication for a message strategy.

However, many hypotheses do carry such implications about message strategies. If the perceived risk of health consequences is key, then messages about the extent of risk might be expected to influence behavior. If perceptions of peer behavior are central and if others are, in fact, not using cigarettes, messages emphasizing what peers are doing would be appropriate. Thus, the first task is to lay out the range of possible influences on a behavior and their implied message strategies.

This list should drive the design of the survey, since the largest number of questions will be meant to indicate the extent to which the respondent believes or doesn't believe in the truth of a statement. For the sake of this article, we will assume that the target audience is adolescents, and the target behavior is quitting smoking. To illustrate the process of choosing among message strategies, we will assume that

there are only three candidate strategies, one of which emphasizes the risk of a health consequence from smoking, the second of which emphasizes a perception that smoking is the norm among friends and the third, which emphasizes general disapproval of smoking as a behavior. We use the data from the 1996 Monitoring the Future survey of 12th grade students (Bachman, Johnston, & O'Malley, 1998), selecting those students who describe themselves as having smoked in the last 30 days. Our analysis focuses on the four questions which follow, with the response categories in parentheses after the questions. The first three questions embody one of the three hypotheses, while the fourth question, asking about 'wanting to stop,' will be used as the outcome variable.

1) How much do you think people risk harming themselves (physically or in other ways) if they smoke one or more packs of cigarettes per day? [no risk, slight risk, moderate risk, great risk].

2) How many of your friends would you estimate smoke cigarettes? [none of them, a few of them, half of them, most of them, all of them].

3) Do you disapprove of people (who are 18 or older) smoking one or more packs of cigarettes a day? [don't disapprove, disapprove, strongly disapprove].

4) Do you want to stop smoking now? [Yes, No]

The survey was done with 2,466 12th grade students in the Spring of 1996 by the University of Michigan and the data were downloaded from the website of the Institute for Survey Research (Bachman et al. 1998). Our choice of questions to analyze was constrained by what was available on a common form in that data set. To simplify presentation, all data were recoded into dichotomous variables and presented as cross-tabulations. Only the 602 currently smoking respondents, who answered the question about wanting to stop smoking, were included in the tables. How would the results of these analyses be turned into specific message strategy advice?

APPLICATIONS

TABLE 1 – Wanting to Stop Smoking and Belief that Cigarettes are Harmful

Do you want to stop smoking?	Perceived risk that people will harm themselves if they smoke one or more packs per day.		
	None or slight risk	Moderate or great risk	% (N)
No	80%	58%	61% (349)
Yes	20%	42%	39% (219)
% (N)	15% (85)	85% (483)	568

A message strategy is promising insofar as it satisfies three criteria:

1) There are a substantial number of people who are not in the desired position on the message strategy-relevant variable.

2) There is a substantial relation between the message strategy-relevant variable and the outcome variable. Different values on the message strategy-relevant variable should predict who will and who will not engage in the desired behavior.

3) It will be feasible to move the target audience on the message strategy-relevant variable. It is a belief that might be learned from an educational campaign.

For each of the three candidate strategies, we can address each of those questions. A dichotomized version of each variable is used in Table 1, Table 2 or Table 3, which present results for the risk, normative and general disapproval strategies, respectively.

EVALUATION OF STRATEGIES

We begin with the risk strategy. The first criterion is whether there are a substantial number of people who hold the 'wrong' belief or whether the target popula-tion already holds the 'correct' belief. In Table 1, the answer is fairly clear. Eighty-five percent of the respondents already recognize the risk of cigarette use. This potential strategy doesn't look promising on those grounds, since there are only 15% of the population who hold the 'wrong' position.

We go on to consider the second criterion: Does status on the message strategy variable actually predict behavior (or in this case intention to undertake a behavior)? Here, the data are more optimistic; while 20% of those who don't perceive much risk want to stop smoking, 42% of those who do perceive the risk want to stop. A typical way of summarizing this relationship is the relative odds ratio. This is calculated by comparing the ratios in the two columns: (.42/.58)/(.20/.80) which in this case is equal to 2.90. Thus the odds of wanting to quit smoking are 2.9 times greater if one perceives the risk of smoking than if one doesn't.

The final criterion is whether or not the predictor belief is 'movable.' In the judgment of the planner, will it be possible to convince people of the risk of harm from smoking? In the end, this is a judgment call. On the one hand, the fact that many people already hold this belief makes it promising on this criterion. If 85% of

APPLICATIONS

the population already believe that the risk is substantial, shouldn't it be possible to convince the others? A contrary view would be that if there was enough public information in the environment to convince 85% of the population, the 15% who were not convinced must be quite resistant to messages. On those grounds, a new set of messages might not be expected to be helpful. We return to deciding whether or not this strategy is promising after we examine the remaining strategies.

This analysis of the first message strategy contrasts with the sense one can make of the data in Table 2, which examines the association between normative perceptions and willingness to quit smoking.

Against the first criterion, whether or not there is anyone left to convince, this predictor variable fares much better than the first. Sixty-three percent of this sample of smokers believe that most of their friends are smoking. Against the second criterion, the presence of a substantial association between the belief and the outcome (intentions), this strategy doesn't look very good: 39% of those who have few friends smoking intend to quit themselves; virtually the same proportion, 37%, of those who have many friends smoking intend to quit. Again, this can be summarized as relative odds, the ratio of the numbers in each

column (.39/.61)/(.37/.63), equal to 1.09, essentially showing no relationship.

This lack of a relationship suggests that a social expectations strategy would not be so promising. However, we examine the final criterion, whether or not people are movable on the targeted belief. As before, judgment comes to the fore. Even if there was a relationship, is it reasonable to expect to convince people that their friends do not smoke when their direct perceptions are that they do? If the respondents are accurately reporting their close friends' behavior, it seems doubtful that any communication strategy will convince them otherwise.

There are two substantive comments about this result worth noting. On the one hand, despite the lack of relationship with desire to quit smoking here, in data not presented here, friends' smoking behavior is highly related to respondent's current smoking behavior. This suggests that peer influences are worth attention if the issue is initiation of smoking. It may also be that friends' smoking behavior is not the same as peer expectations that the respondent stop smoking. Friends may be saying that the respondent ought to quit, even if they are smoking themselves. If we had a measure of perceived expectation of others that one stop smoking, there might have been a relationship.

Table 2 – Wanting to Stop Smoking and Friends' Smoking

Do you want to stop smoking?	Belief that friends smoke		% (N)
	Most of them, all of them.	None of them, a few of them, some of them	
No	63%	61%	62% (327)
Yes	37%	39%	38% (201)
% (N)	63% (334)	37% (194)	528

APPLICATIONS

Table 3 – Wanting to Stop Smoking and Disapproval of Smoking

Do you want to stop smoking?	Disapproval of people smoking one or more packs of cigarettes a day		
	Don't Disapprove	Disapprove, Strongly Disapprove	% (N)
No	67%	54%	64% (246)
Yes	33%	46%	36% (141)
% (N)	73% (284)	27% (103)	387*

*Note: Disapproval questions asked only of a subset of the sample.

A final example considers the issue of generalized disapproval of smoking. Table 3 presents the data. Against the first criterion; having some members of the audience who hold the 'wrong' view, this predictor does well, with 73% who 'don't disapprove,' perhaps not surprising for a sample of smokers. Against the second criterion, association with desire to stop smoking, the variable does only moderately well, with 33% of those who don't disapprove and 46% of those who do disapprove wanting to quit. The relative odds would be $(.46/.54)/(.33/.67) = 1.73$, not as strong as in the first table, but still of some size. For the last criterion, 'movableness,' many message planners would be hopeful. While most smokers *don't disapprove*, the fact that one quarter of them do disapprove suggests that it is something that even smokers might accept.

So against the three criteria, the three message strategies fare differently. The first strategy is probably not promising: While it has the strongest relationship with behavior, there are few people left unconvinced of this belief to promise much reward. This is supported by an estimate of how much change in the population would occur if a campaign focusing on this message strategy was completely successful and everyone believed the statement. In Table 1, 39% of all of the respondents want to stop smoking. Imagine that every one of the people who did not believe in the risk of smoking became convinced, and looked just like the people who are believers in Table 1. Then, we would expect that 42% of them would intend to quit. The maximum change we could expect from a completely successful implementation of this strategy would be a change from 39% to 42% wanting to quit, a minimal change.

The second strategy is quite promising on the first criterion, lots of people to change, but it fails on the second, since there is no relationship. Also, if, in reality, friends are smoking, it would seem difficult to imagine messages which would produce change in that belief.

The third strategy is perhaps the most promising, given the data. There are a large number of people to move, there is a moderate relationship between the belief and the intended behavior, and it may be possible to develop a set of messages that will increase disapproval of smoking. Complete success would mean there would be 46% rather than 36% of smokers wanting to quit now, a worthwhile change.

Clearly, these analyses are only illustrative, and they are constrained by the secondary data available to us, thus the

APPLICATIONS

choices of hypotheses we could test. Certainly, other potential explanations for behavior, and thus other message strategies, might have been tested had we started the process from scratch. Nonetheless, they give some notion of what the process of analysis and interpretation might look like while using widely available data.

> If 85% of the population already believe that the risk is substantial, shouldn't it be possible to convince the others? A contrary view would be that if there was enough public information in the environment to convince 85% of the population, the 15% who were not convinced must be quite resistant to messages.

IMPLICATIONS FOR SOCIAL MARKETING

This analysis illustrates the process a message planner might go through if he or she wanted to exploit survey data to inform message strategy choice. The strengths of this approach are substantial. By laying out hypotheses explicitly and subjecting them to systematic empirical tests on a representative sample of the population, one will produce evidence that can help eliminate some potential approaches and provide support for others. Surveys provide evidence that is somewhat independent of the observer, reducing dependence on *a priori* suppositions about the audience that may have been based on anecdotal evidence or insights derived from conversations with unrepresentative informants.

There are some limitations to this approach, of course. The implication of this analysis is that if one changes a predictor belief, one can expect change in the predicted outcome. But, these are cross-sectional data, and one ought not confuse observed association with claims of causation. There remains a risk that some other confounding factor accounts for an observed relation or that there is reverse causation – with intentions to stop smoking causing beliefs, rather than vice versa. The presence of an association cannot guarantee that a change in the predictor belief will produce a change in the outcome.

There are weaknesses in this approach, surely. They constrain one's confidence in the recommendations that derive from the analysis. However, the issue here is not whether this analysis will provide an incontrovertible foundation for message planning. The criterion for assessing the worth of this approach is whether it improves judgment, making the planner less likely to go off in a problematic direction. It should be valuable, in this way, at both stages. The process of generating candidate strategies will force planners to be explicit about what they might consider. The process of analyzing the results against established criteria will lead to the rejection of some approaches and support for the candidacy of others.

Unlike some qualitative approaches, for example, focus groups or in-depth interviews, survey research may not be so useful in generating the first list of ideas for possible message strategies. Indeed, it will often make sense to delay survey work until exploratory research is complete and can be used as the basis for the development of candidate message strategies. However, the survey approach has the advantage of being systematic and offers the ability to examine candidate strategies on a representative sample of the target population.

In sum, cross-sectional survey research can both inform and be informed by the judgment of the planners. We think that it promises to improve the quality of message strategy planning.

REFERENCES

AJZEN, I. & FISHBEIN, M. (1980). *Understanding attitudes and predicting social behavior.* Englewood Cliffs, NJ: Prentice Hall, Inc.

BACHMAN, J. G., JOHNSTON, L. D. & O'MALLEY, P. M. (1998). *Monitoring the Future: A continuing study of American youth (12th grade survey) 1996* [Computer file]. Conducted by University of Michigan, Survey Research Center. ICPSR ed. Ann Arbor, MI: Inter-University Consortium for Political and Social Research [Producer and Distributor].

FISHBEIN, M., MIDDLESTADT, S. E. & HITCHCOCK, P. J. (1991). Using information to change sexually transmitted disease-related behaviors: An analysis based on the theory of reasoned action. In J.N. Wasserheit, S.O. Aral & K.K Holmes (Eds.), *Research issues in human behavior and sexually transmitted diseases in the AIDS era* (pp. 243-257). Washington, DC: American Society for Microbiology.

HORNIK, R. (1991). Alternative models of behavior change. In J.N. Wasserheit, S.O. Aral & K.K Holmes (Eds.), *Research issues in human behavior and sexually transmitted diseases in the AIDS era* (pp. 201-218). Washington, DC: American Society for Microbiology.

MAIBACH, E. & PARROTT, R. L. (Eds.). (1995). *Designing health messages: Approaches from communication theory and public health practice.* Thousand Oaks, CA: Sage.

ABOUT THE AUTHORS

Robert Hornik, Ph.D., is a Professor of Communication, and holds the Wilbur Schramm Chair in Communication and Health Policy at the Annenberg School for Communication, University of Pennsylvania. He has led efforts to design and evaluate large-scale public health communication and education programs. Some major projects for which Hornik has been principal investigator include USAID-sponsored evaluations of national AIDS education programs in four developing countries, of communication for child survival programs in 10 developing countries, and CDC-sponsored research on determinants of immunization status in Philadelphia. He is currently co-principal investigator and scientific director for the evaluation of the National Youth Anti-drug Media Campaign, as well as principal investigator on two evaluations of domestic violence prevention projects, one in Philadelphia, and one nationwide.

Kimberly Duyck Woolf, M.A., provided research assistance with this paper. She is a doctoral candidate at the Annenberg School for Communication, University of Pennsylvania. Her research interests include developmental differences in comprehension of media messages and the effects such messages have on children's attitudes and behavior.