



University of Pennsylvania  
ScholarlyCommons

---

Departmental Papers (ASC)

Annenberg School for Communication

---

October 2002

# Exposure: Theory and Evidence About All the Ways It Matters

Robert C. Hornik

*University of Pennsylvania*, [rhornik@asc.upenn.edu](mailto:rhornik@asc.upenn.edu)

Follow this and additional works at: [http://repository.upenn.edu/asc\\_papers](http://repository.upenn.edu/asc_papers)

---

## Recommended Citation

Hornik, R. C. (2002). Exposure: Theory and Evidence About All the Ways It Matters. *Social Marketing Quarterly*, 8 (3), 30-37.  
<https://doi.org/10.1080/15245000214135>

This paper is posted at ScholarlyCommons. [http://repository.upenn.edu/asc\\_papers/100](http://repository.upenn.edu/asc_papers/100)  
For more information, please contact [libraryrepository@pobox.upenn.edu](mailto:libraryrepository@pobox.upenn.edu).

---

## Exposure: Theory and Evidence About All the Ways It Matters

### **Abstract**

Much work on the public health communication component of social marketing focuses on message development. But there is good evidence that failure and success in public health communication is better predicted by variation in exposure to messages achieved than it is by variation in quality of messages. The inconsistent results about effects from some major projects (Stanford Heart Disease, Minnesota Heart Health, Pawtucket Heart Health, COMMIT) may reflect their lack of success in obtaining heavy exposure to their messages. Those results contrast with the successful results of a variety of other programs, particularly kitchen sink programs, which have been able to obtain higher levels of exposure and have some evidence of important effects.

# EXPOSURE: THEORY AND EVIDENCE ABOUT ALL THE WAYS IT MATTERS

---

By Robert C. Hornik

## INTRODUCTION

Much work on the public health communication component of social marketing focuses on message development. But there is good evidence that failure and success in public health communication is better predicted by variation in exposure to messages achieved than it is by variation in quality of messages. The inconsistent results about effects from some major projects (Stanford Heart Disease, Minnesota Heart Health, Pawtucket Heart Health, COMMIT) may reflect their lack of success in obtaining heavy exposure to their messages. Those results contrast with the successful results of a variety of other programs, particularly kitchen sink programs, which have been able to obtain higher levels of exposure and have some evidence of important effects.

Two follow-on fundamental questions are raised by these results: How is it that high exposure can be achieved, particularly in the absence of money to purchase media time? How is it that exposure produces effects? Heavy exposure may matter for effects for a variety of reasons: increased opportunity for learning specific messages; increases in perception that an issue is important to take into account; increases in the likelihood that social discussion of messages will be stimulated; and increases in the perception that a new behavior is socially expected.

## SOME PROBLEMATIC RESULTS

The results of three projects illustrate some apparent program failures. The Community Intervention Trial for Smoking Cessation (COMMIT) project was a very large experiment mounted by the National Cancer Institute to affect tobacco use among heavy smokers (COMMIT, 1995). Eleven pairs of matched cities were organized, and one of

each pair received an intervention, which included public education, work through health care providers and work sites, and provision of cessation resources, among other activities. The interventions lasted for four years and cost about \$900,000 per city. At the end of the four years about 18% of the heavy smokers in the control cities had quit, and about 18% of the heavy smokers in the intervention cities had quit.

The Minnesota Heart Health Program was a six-year intervention, sponsored by the National Heart Lung and Blood Institute (NHLBI), to try and reduce heart-risky behavior. It was a follow-on to the original Stanford Three Community Study and was mounted simultaneously with the Stanford Five Community Study and the Pawtucket Heart Health program. It worked in three experimental communities, keeping three other communities as control cities. The interventions included retraining health professionals, systematic risk factor screening, mass media outreach and organized classes, as well as other activities. At the end of the six-year intervention, the control cities showed a 7% decline in coronary heart disease risk, and the treatment cities showed a 4% decline; there was no statistically interpretable difference between them (Luepker et al., 1994).

A third example is the Philadelphia Anti-Domestic Violence program, a 15-month campaign in Philadelphia, PA intending to affect social norms around domestic violence and encourage people to talk with others, including those at risk, about such violence. The intervention included public relations efforts to stimulate media coverage, some public service and some paid advertising, and work site and grassroots organizing. At the start of the program, about three-quarters of all adult Philadelphia respondents said they would talk with a woman

who they thought was being abused; at the end of the program that proportion was unchanged (Hornik, Wray, Stryker, & Appleyard, 2002).

These three programs did not achieve their major goals, although the first two had some successes (COMMIT in increasing moderate smokers' quit rates and the Minnesota program in reducing women's smoking rates). Their problematic results are similar to those achieved by other important trials of the same period. The question is why were they unsuccessful in affecting their primary outcomes? Was it that they chose behaviors that were simply not susceptible to change? Clearly this was not the issue: Heart-risky behaviors and smoking rates, specifically, were widely changing during the same periods that these programs were operating and failing to change these behaviors (see Hornik, 2002b, for many examples).

Just previous to the Philadelphia campaign, there was also a clearly increasing rejection of domestic violence. Were these programs unsuccessful because they were "only" communication programs and did not bring the other elements of social marketing to their operations? Or did they choose the wrong messages for their communication efforts, leaving their target audiences unconvinced? There is no way to be sure that the incorporation of some other program element or some different focus to the messages might not have produced a better outcome. However, in each case the programs were developed and implemented by serious people with a good understanding of relevant issues. If they did it wrong, it was not likely to be because they did not understand the logic of social marketing or the need for developing appropriate messages. Instead, it appears that a stronger explanation lies in their inability to achieve a high level of exposure for their messages.

The COMMIT trial used five channels: distributing smoking cessation kits; working through health care sites, work sites, and religious organizations; and making some use of mass media. Based on a population survey in which people were asked to recall their contact with each activity, a rough index sums the level of exposure to all channels on a 0-45 point scale. The 11 intervention cities scored a mean of 15.2 and the control cities scored a mean of 14.9, a trivial difference. The Minnesota program reported exposure to its messages on a 0-10 point scale; across the six years of the trial, the intervention cities scored a mean of 2.5 and the control cities a mean of 1.9. The difference was small (although statistically significant). In the Philadelphia program almost 80% of the respondents recalled seeing an antidomestic violence television ad in the past year before the launch of the campaign; this percentage actually declined during much of the period of the campaign.

In each of these three cases, the interventions were unsuccessful in achieving their primary goals, but they were also unsuccessful in achieving substantial increases in recalled exposure to their messages among the population. It is perhaps no surprise: If a program is unable to achieve much additional exposure to its messages, it is quite unlikely to achieve its outcomes.

### **SOME OPTIMISTIC RESULTS**

However, it is not enough to show that programs with low exposure did not produce good outcomes. It is important to establish that the opposite side of the equation is true as well: Programs that have achieved high exposure have produced worthwhile outcomes. There are important examples of programs that achieved high levels of exposure to their interventions and important behavioral outcomes as well.

Six examples of such programs include the Kentucky Drug Intervention, the Swiss AIDS Campaign, the California Tobacco Campaign, the Healthcom interventions, the nonexperimental results from the COMMIT trial, and the National High Blood Pressure Education Program.

The Kentucky program was a two-county trial of anti-marijuana paid advertising; enough advertising time was purchased to reach 70% of the targeted teen audience three times per week. In fact, 85% of the intended audience recalled exposure to the ads during intervention periods. Each of the campaigns was associated with a sharp decline in past 30-day use of marijuana among high sensation-seeking youth (Palmgreen, Donohew, Lorch, Hoyle, & Stephenson, 2002).

The Swiss "Stop AIDS" campaign was a broad national campaign with explicit messages on television, radio, newspapers and outdoor advertising encouraging condom use. It was carried out amidst heavy coverage of the epidemic by Swiss mass media, so it is difficult to separate the effects of the deliberate campaign from natural media coverage. Nonetheless, the level of behavior change was striking: In 1987 less than 10% of 17- to 30-year-olds reported "always" using condoms when they had casual sex; by 1988 this had increased to more than 40% and continued to increase to close to 60% by the early 1990s (Dubois-Arber, Jeannin, Konings, & Paccaud, 1997).

The California antitobacco campaign included several elements: increased taxes, encouraging the development of local antismoking ordinances, as well as a substantial mass media campaign, costing about \$15 million per year between 1989-1993. During this period, California was declining more rapidly than the rest of the U.S. in its smoking prevalence (Pierce, Emery, & Gilpin, 2002). There is some evidence to suggest that the mass media

component played a substantial role in this decline (Hu, Sung, & Keeler, 1995).

The Healthcom interventions were a set of programs sponsored by the U.S. Agency for International Development in developing countries to affect child survival-related behaviors such as immunization, appropriate treatment of diarrheal disease, and breastfeeding. There were 16 evaluations of such programs in 10 countries. Seven programs achieved only a low level of mass media exposure; only two of them were successful, and both achieved a high level of personal outreach by health workers. The remaining nine programs achieved high levels of exposure to mass mediated messages; of those nine, seven were successful. While this is a crude analysis, it supports the arguments that exposure is crucial to success (Hornik et al., 2002).

The COMMIT trial was described above as unsuccessful in increasing quit rates among its target audience of heavy smokers, and it achieved only a low level of exposure. However, it also provides an example of the importance of high exposure. In a post hoc nonexperimental analysis, the COMMIT research team compared the level of exposure achieved in a city to the level of quit rates among moderate smokers. In those cases when an intervention city achieved a higher level of exposure than its matched control city, its quit rate was also noticeably higher. The rank correlation between level of exposure and level of quit rate was .71.

Finally, the National High Blood Pressure Education Program was a kitchen sink effort started in 1972 by the NHLBI to transform the treatment of high blood pressure in the U.S. It involved professional education, mass mediated interventions, community organizational work, and many other activities, undertaken over a long period and on a large scale. The program was associated with a sharp

change in awareness of the risks of high blood pressure, in the proportion of hypertensives under medical control, and with a large decline in stroke mortality rates. In the 12-year period before 1972, the stroke rate was declining for all U.S. Whites at 1.6% per year; in the 1972-1984 period the decline was nearly 6% per year. While other changes (in treatments or in available medications, for example) occurred during the same period, they were probably not sufficient to account for the observed declines (Rocella, 2002).

In each of these examples and others (Hornik, 2002b), a high level of exposure was associated with substantial behavioral outcomes. Although the evaluations do not use randomized trials and they cannot eliminate all other explanations for the observed results, they do make good cases for the attribution of effects to the programs. They suggest that exposure is a necessary element to achieving program success; however, they do not guarantee that exposure is sufficient to achieve such success.

## HOW DOES EXPOSURE WORK?

There are at least five mechanisms that suggest an important role for exposure. The obvious mechanism is simple learning. The more times a message is made available, the more times an individual will be exposed to it and the more likely he or she is to learn it. Or, in a slightly more elaborate form, if people vary over time in their readiness to attend to a message, the more times it is made available, the more likely they are to hear/see it when they are ready to attend to it. However, simple learning may not be the only way that exposure matters. A second path of effect may be "priming."

Priming occurs when repeated exposure to a message affects the weight given to the message in deciding to engage in a behavior. Thus a campaign may provide

repeated messages about the effects of smoking on athletic stamina. The first hearing may be enough to convince someone that there are deleterious effects, but multiple hearings may prime that belief so it is more likely to affect a decision about whether to continue smoking (Cappella, Fishbein, Hornik, Ahern, & Sayeed, 2001).

High levels of exposure to messages, particularly if they come from a variety of channels, may affect behavior in a third way, also. They may communicate an implicit social expectation about a behavior. If many channels are transmitting a message often, the meta-message may be that society expects a particular behavior. If an individual is vulnerable to social norm pressure, such repeated exposure may communicate a new social norm.

A fourth path of effect for high exposure may be in its ability to affect social discussion about an issue and thus the diffusion of the messages. If the message is coming from many sources, and is heard often, it is more likely to be the subject of discussion. Those discussions may pass the message on, reinforce the message, or lead to social network rejection of the message.

The final path of effect may not involve direct audience influence at all. If a message gets high exposure it is more likely to be heard by policymakers. If policy attention reflects what is in the public arena, high levels of exposure may signal to policymakers that the issue has captured public attention. Issues of public concern, in turn, are the subjects of legislation, regulation, and funding for interventions and of funding for research. These, in turn, may affect the audiences' behavior.

Whatever the path of effect, the implication of these arguments is clear: Get exposure, get exposure through

multiple channels, and get exposure repeatedly over time. That recommendation is easy enough to make; the question is how it can be done in practice.

## HOW TO GET EXPOSURE (PER CAPITA)

The obvious path to exposure is money: If a program wants exposure for its messages, it needs to buy advertising time. This is what a few large programs have been able to do in the past few years, notably the National Youth Anti-Drug Media Campaign and the American Legacy Foundation's *truth* campaign (as well as some state-level antitobacco campaigns). However, if buying time is beyond the available resources of a program, what can it do?

It can beg for exposure. It can ask for donated time from media outlets. The Ad Council has taken some responsibility to act as an intermediary between nonprofits and the media, and there has been intermittent success with some campaigns. Still, the total amount of such donated time is small and divided among many claimants. In a recent report, the Kaiser Foundation made it clear how small the opportunity is, noting that the total donated TV time available was about 15 seconds per hour with most donated time in overnight hours (Kaiser Family Foundation, 2002). This path is most likely to be successful when the message is novel and focused, when it can be made appealing to local stations, when a little exposure is enough, and when grassroots lobbying support can be mobilized to stimulate local replay of messages.

A third path of effect would be to "earn" the coverage. There are two versions of this. Public relations professionals work hard to be able to gain media attention for their concerns. Most sophisticated social marketing programs take a similar path, encouraging the

broadcast and print press, entertainment programs, and other outlets to attend to their message. They hope that they can earn enough coverage through these efforts, while retaining control over the message content, to achieve enhanced exposure to their messages. A second version of "earned" exposure focuses not on direct audience effects but on effects on policymakers. In their book *Media Advocacy* (1993), Wallack, Dorfman, Jernigan, and Themba focus on the problem of convincing policymakers to endorse regulations or legislation favoring a particular viewpoint. They present a range of strategies for producing favorable press coverage so as to put pressure on policymakers.

Finally, what does a program do when it becomes clear that it has no good path for achieving the needed level of exposure? In that case there are three possible responses: The program needs to develop a "getting exposure" strategy, that is, a way of marketing its messages; the program needs to choose another objective, one that can be achieved with only a low level of exposure; or, finally, a program can redefine its target population to a narrow one for which it is able to achieve a needed level of exposure.

## CONCLUSION

There has been a great deal of attention in the social marketing and health communication literature to the importance of messages and the need for them to be responsive to their audiences. There has been a good deal of attention to the need for developing complementary components to support communication efforts, to make sure that it is possible for people to take recommended actions. There is some recognition of the need for segmentation of audiences, for the need to understand the audience and what will

influence it to change, and for being patient for changes that may occur only slowly. These are all important elements in constructing a public health social marketing program. However, none of them matter if the program cannot devise a strategy for getting exposure, through multiple channels, over time.

## REFERENCES

- CAPPELLA, J., FISHBEIN, M., HORNİK, R., AHERN, R. K., & SAYEED, S.** (2001). Using theory to select messages in anti-drug media campaigns: Reasoned action and media priming. In R. Rice and C. Atkin (Eds.), *Public communication campaigns*. Thousand Oaks, CA: Sage.
- COMMUNITY INTERVENTION TRIAL FOR SMOKING CESSATION (COMMIT).** (1995). I. Cohort Results from a four-year intervention. *American Journal of Public Health, 85*, 183-192.
- DUBOIS-ARBER, F., JEANNIN, A., KONINGS, E., & PACCAUD, F.** (1997). Increased condom use without other major changes in sexual behavior among the general population in Switzerland. *American Journal of Public Health, 87*(4), 558-566.
- HORNİK, R.** (2002a). Public health communication: Making sense of contradictory evidence. In R. Hornik (Ed.), *Public health communication: Evidence for behavior change* (pp. 1-19). Mahwah, NJ: Lawrence Erlbaum.
- HORNİK, R. (Ed.)** (2002b). *Public health communication: Evidence for behavior change*. Mahwah, NJ: Lawrence Erlbaum.
- HORNİK, R., MCDIVITT, J., ZIMICKI, S., YODER, P.S., CONTRERAS-BUDGE, E., MCDOWELL, J., & RASMUSON, M.** (2002). Communication in support of child survival: Evidence and explanations from eight countries. In R. Hornik (Ed.), *Public health communication: Evidence for behavior change* (pp. 219-248). Mahwah, NJ: Lawrence Erlbaum.
- HORNİK, R., WRAY, R., STRYKER, J., & APPELYARD, J.** (2000, June). *Final report: Evaluation of the Philadelphia: Let's Stop Domestic Violence! Project*. Philadelphia, PA: Annenberg Public Policy Center.
- HU, T. W., SUNG, H. Y., & KEELER, T. E.** (1995). Reducing cigarette consumption in California:



Tobacco taxes versus an anti-smoking media campaign. *American Journal of Public Health*, 85, 1218-1222.

**KAISER FAMILY FOUNDATION.** (2002). *Shouting to be heard: Public service advertising in a new media age, executive summary*. Menlo Park, CA: Henry J. Kaiser Family Foundation.

**LUEPKER, R. V., MURRAY, D. M., JACOBS, D. R., JR., MITTELMARK, M. B., BRACHT, N., CARLAW, R., CROW, R., ELMER, P., FINNEGAN, J., & FOLSOM, A. R.** (1994). Community education for cardiovascular disease prevention: Risk factor changes in the Minnesota Heart Health Program. *American Journal of Public Health*, 84(9), 1383-1393.

**PALMGREEN, P., DONOHEW, L., LORCH, E. P., HOYLE, R. H., & STEPHENSON, M. T.** (2002). Television campaigns and sensation seeking targeting of adolescent marijuana use: A controlled time series approach. In R. Hornik (Ed.), *Public health communication: Evidence for behavior change* (pp. 34-56). Mahwah, NJ: Lawrence Erlbaum.

**PIERCE, J., EMERY, S., & GILPIN, E.** (2002). The California Tobacco Control Program: A long-term health communication project. In R. Hornik (Ed.), *Public health communication: Evidence for behavior change* (pp. 97-114). Mahwah, NJ: Lawrence Erlbaum.

**ROCCELLA, E.** (2002). The contributions of public health education toward the reduction of cardiovascular disease mortality: Experiences from the National High Blood Pressure Education Program. In R. Hornik (Ed.), *Public health communication: Evidence for behavior change* (pp. 73-84). Mahwah, NJ: Lawrence Erlbaum.

**WALLACK, L., DORFMAN, L., JERNIGAN, D., & THEMBA, M.** (1993). *Media advocacy and public health: Power for prevention*. Newbury Park, CA: Sage.