

# Community AIDS/HIV Risk Reduction: The Effects of Endorsements by Popular People in Three Cities

## ABSTRACT

**Objectives.** It is critical to extend community-level acquired immunodeficiency syndrome (AIDS) prevention efforts beyond education alone and to develop models that better encourage behavioral changes. Gay men in small cities are vulnerable to human immunodeficiency virus (HIV) infection due to continued high rates of risk behavior. This research introduced an intervention that trained popular people to serve as behavioral change endorsers to peers sequentially across three different cities.

**Methods.** Populationwide surveys were conducted of all men patronizing gay clubs in each city to establish risk behavior base rates. After a small cadre of popular "trendsetters" were identified, they received training in approaches for peer education and then contracted to communicate risk reduction recommendations and endorsements to friends. Surveys were repeated at regular intervals in all cities, with the same intervention introduced in lagged fashion across each community.

**Results.** Intervention consistently produced systematic reductions in the population's high-risk behavior (unprotected anal intercourse) of 15% to 29% from baseline levels, with the same pattern of effects sequentially replicated in all three cities.

**Conclusions.** This constitutes the first controlled, multiple-city test of an HIV prevention model targeting communities. The results support the utility of norm-changing approaches to reduce HIV risk behavior. (*Am J Public Health.* 1992;82:1483-1489)

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### Introduction

Reductions in acquired immunodeficiency syndrome/human immunodeficiency virus (AIDS/HIV) high-risk practices among gay men in large cities have been attributed, in part, to evolving social norms that now discourage risky practices and advocate the adoption of precautionary measures.<sup>1</sup> The influential role of peer norms on HIV risk behavior patterns is further highlighted by findings that gay men who successfully reduce their high-risk practices report greater peer support for making these changes,<sup>2</sup> and by strong associations between risk behavior levels and perceptions of the social/peer acceptability of condom use.<sup>3,4</sup> From a community intervention perspective, HIV primary prevention efforts could be enhanced by developing practical strategies for introducing new behavioral standards and social norms that can encourage individuals to avoid high-risk activities and adopt risk reduction precautions. To be most effective from a primary prevention perspective, however, these changes must precede rather than follow dissemination of widespread HIV infection in a risk population. Unfortunately, almost no experimental research has yet been directed to the question of how best to produce these community-level behavioral changes.

We recently reported the results of a preliminary investigation on the effect of training popular opinion leaders in the gay community of a small city to serve as behavioral change endorsers to their friends and acquaintances.<sup>5</sup> That study, undertaken in a single city selected because of high rates of initial risk behavior in its gay population, found that frequency of risk practice was reduced in the population fol-

lowing intervention with key opinion leaders, lending credence to the notion that it is possible to induce risk behavior change experimentally by intervening with a socially influential subset of a population. This effect would be predicted from diffusion theory,<sup>6</sup> in which "trendsetters" who endorse innovations can help to refine behavioral norms and standards. The purpose of the current investigation was to replicate, extend, and better establish the generality of this model by evaluating it sequentially in three different communities.

### Method

This research was conducted from 1989 to 1991 in three small southern cities: Biloxi, Mississippi; Hattiesburg, Mississippi; and Monroe, Louisiana. These cities were selected because they constitute compact, independent environments in which it is possible to evaluate the impact of a community intervention. Each city is at least 60 miles from another of the same size or larger; each has one or two heavily patronized gay bars that attract large and

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TABLE 1—Characteristics of Survey Design, of Populations Surveyed in Gay Club(s), and of Opinion Leaders Recruited in Each City

	City 1 Biloxi	City 2 Monroe	City 3 Hattiesburg
3-night baseline survey periods preceding intervention, n	2	4	4
Completed baseline surveys, n	295	355	274
3-night survey periods following intervention, n	3	2	1
Completed postintervention surveys, n	348	185	12
Men approached who completed surveys (response rate), mean %	82	82	80
Mean age, y	31.5	27.1	26.9
Race, %			
White	87	80	89
African American	6	15	7
Hispanic/other	7	5	4
Opinion leaders trained, n	31	29	15
Mean age, y	32.0	26.6	28.0
Sex, % male (female)	90 (10)	81 (19)	93 (7)
Race, %			
White	90	90	87
African American	10	3	13
Hispanic/other	0	7	0

stable crowds; and prior surveys of club patrons in each city revealed high levels of risk behavior.<sup>3,5</sup> The cities have populations of under 75 000 and are demographically comparable to most other cities.<sup>7</sup> No systematic HIV seroprevalence studies have been conducted in these cities, but AIDS cases are much less common here than in larger urban areas. Most gay bars in these cities had AIDS education brochures and publications that provided risk information. These materials, probably representative of the kinds of materials available in most cities' gay clubs, were present throughout the full term of the study.

The experimental design used in this investigation was a multiple baseline or sequential stepwise lagged design,<sup>8</sup> in which initial baseline survey data were collected in all three cities, intervention was then conducted in the first city, surveys were repeated in all cities following the city 1 intervention, intervention was then introduced in city 2, and so on, until each city sequentially received the same intervention. This design permits a systematic comparison of pre- to postintervention risk behavior levels in each community at staggered points to control for extraneous factors that might be responsible for changes and to replicate the same intervention in the three different communities.

### Population Survey Methods

To establish risk behavior levels among gay men, anonymous surveys were conducted over 3-night periods at the gay bar(s) in each city. All men entering the clubs were asked at the door, before drinking, and at individual tables to voluntarily complete a questionnaire that elicited information on sexual behavioral practices (including the number of sexual partners, occurrences of unprotected anal intercourse, and condom use during sex) over the past 2 months. Respondent perception of peer norms concerning the acceptability of safer sex practices was also assessed using five 5-point Likert scale items (sample: "Most of my friends insist on condom use during intercourse"), yielding a score ranging from 5 (social norms not favoring risk behavior avoidance) to 25 (social norms strongly favoring risk behavior avoidance). Items assessing risk behavior knowledge<sup>9</sup> were included in initial surveys but were later dropped because baseline data indicated that factual knowledge about AIDS was already high in each city's population. Across all cities and all survey points, an average of 81% of all men entering the clubs completed the measures, providing a large and representative sampling of each city's population of gay men present in the clubs. Fully completed surveys were collected from 1469 respondents during the

course of the project in all three cities. Unlike clubs in large cities, which commonly reflect transient patterns among their populations, each of these small-city clubs attracted a relatively stable, non-transient local population. A check conducted between the first two baseline surveys indicated that 70% of the persons present at the second survey point had completed the first survey at a bar in the same city. Thus, the data collection method provided successive, partially overlapping cross sections of each city's gay male population. Table 1 summarizes characteristics of the population surveyed in each of the three cities.

### Intervention Procedures

When intervention was introduced in a community, each bartender in that city's gay clubs was trained to observe people in the club independently over a 1-week period and to identify individuals who were most popular with gay men (e.g., those who greeted others, were greeted most often, and were sought out for advice by gay male friends). Bartenders served as judges because they were familiar with club socialization patterns. Persons receiving nominations by more than one bartender were considered to be popular opinion leaders and were recruited for training. Opinion leaders recruited in a city averaged 7% of the total number of men present in the city's club population at the initial baseline survey. Table 1 shows characteristics of the opinion leader cadre recruited in each city.

Opinion leaders attended four weekly 90-minute sessions that taught them the social skills they needed to serve as risk reduction endorsers to their peers. As we have described previously,<sup>5</sup> these sessions trained the opinion leaders how to (1) correct others' misconceptions concerning AIDS risk; (2) recommend to peers the strategies needed to implement risk reduction (e.g., keeping condoms nearby if sexually active, avoiding sex when intoxicated, negotiating safety commitment in advance with a potential sexual partner, and assertively refusing unsafe sex coercions); and (3) personally endorse the benefits, importance, and social acceptability of making precautionary behavioral changes. Training was accomplished using didactic and group discussion methods, modeling of effective health promotion messages, and extensive role play. Each opinion leader contracted to have at least 14 conversations with peers; group sessions reviewed and reinforced these efforts. To stimulate conversational

opportunities further, each opinion leader agreed to wear a small button with a red, yellow, and green traffic light logo (but no text) that matched the logo of special posters placed throughout the clubs. This ambiguous logo elicited numerous questions by others and allowed participants to explain the traffic light color symbolism (high-risk, cautionary, and low-risk behavior) and to deliver additional endorsement messages taught in the sessions. Thus, the objective of the intervention was to establish a cadre of already known, trusted, and well-liked persons who were taught to endorse actively and visibly the importance and acceptability of behavioral change, as well as to convey strategies for change implementation.

Three months following completion of the intervention in the first city (Biloxi), club population surveys were repeated in all three study cities. At that point, the same intervention was introduced in the second city (Monroe), with a survey repeated 3 months later in all three communities. Finally, the intervention was replicated in the third city (Hattiesburg), with another postintervention survey conducted 3 months later across all cities. A city's survey periods were separated by 3 to 6 months. If the intervention successfully influenced a city's population, change in population behavior was expected to be detectable between each city's baseline survey points and its postintervention surveys, with a similar pattern evidenced sequentially across the other communities.<sup>8</sup>

## Results

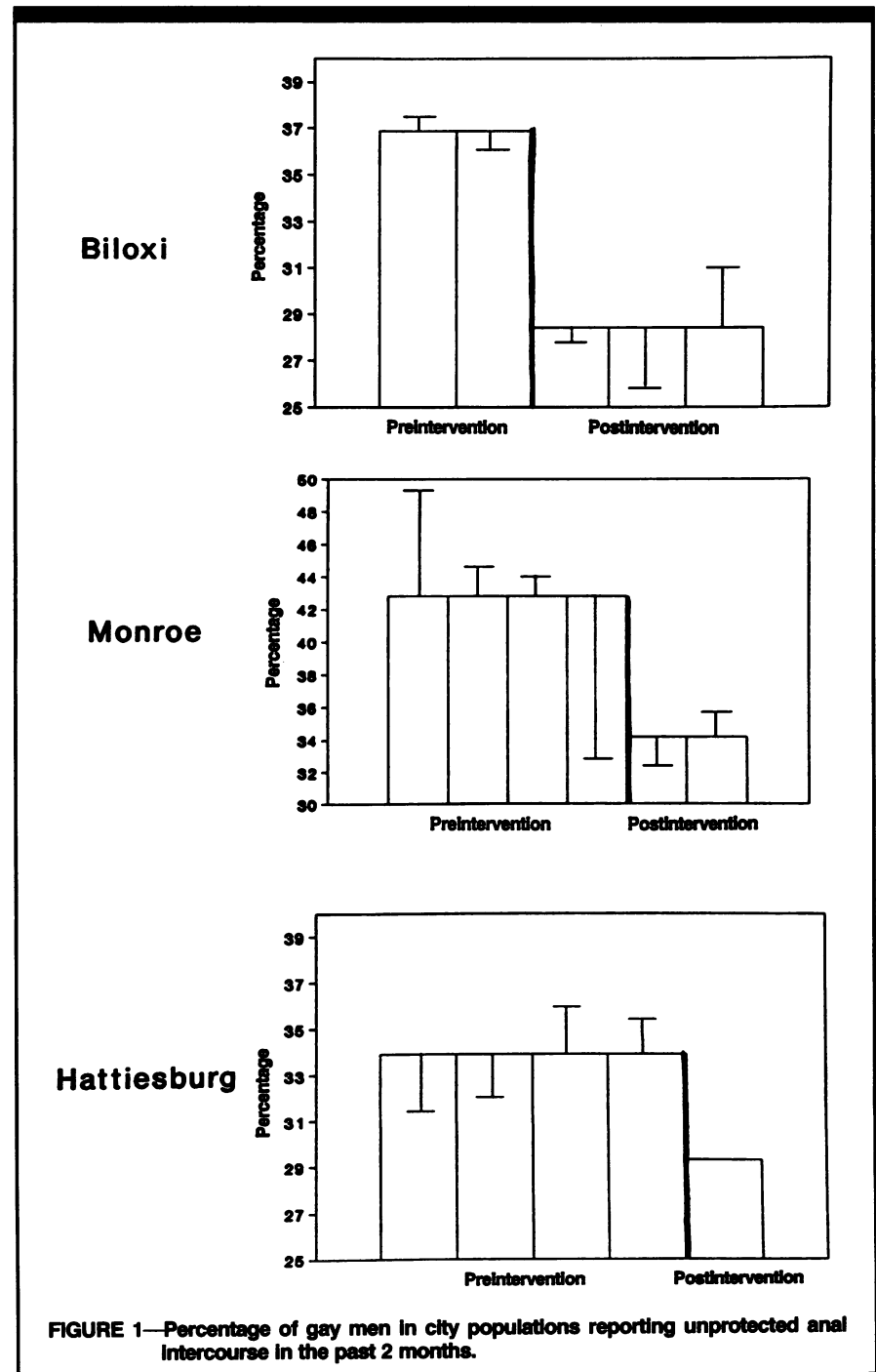
### *Manipulation Checks on Skill Acquisition and Behavior of Opinion Leaders*

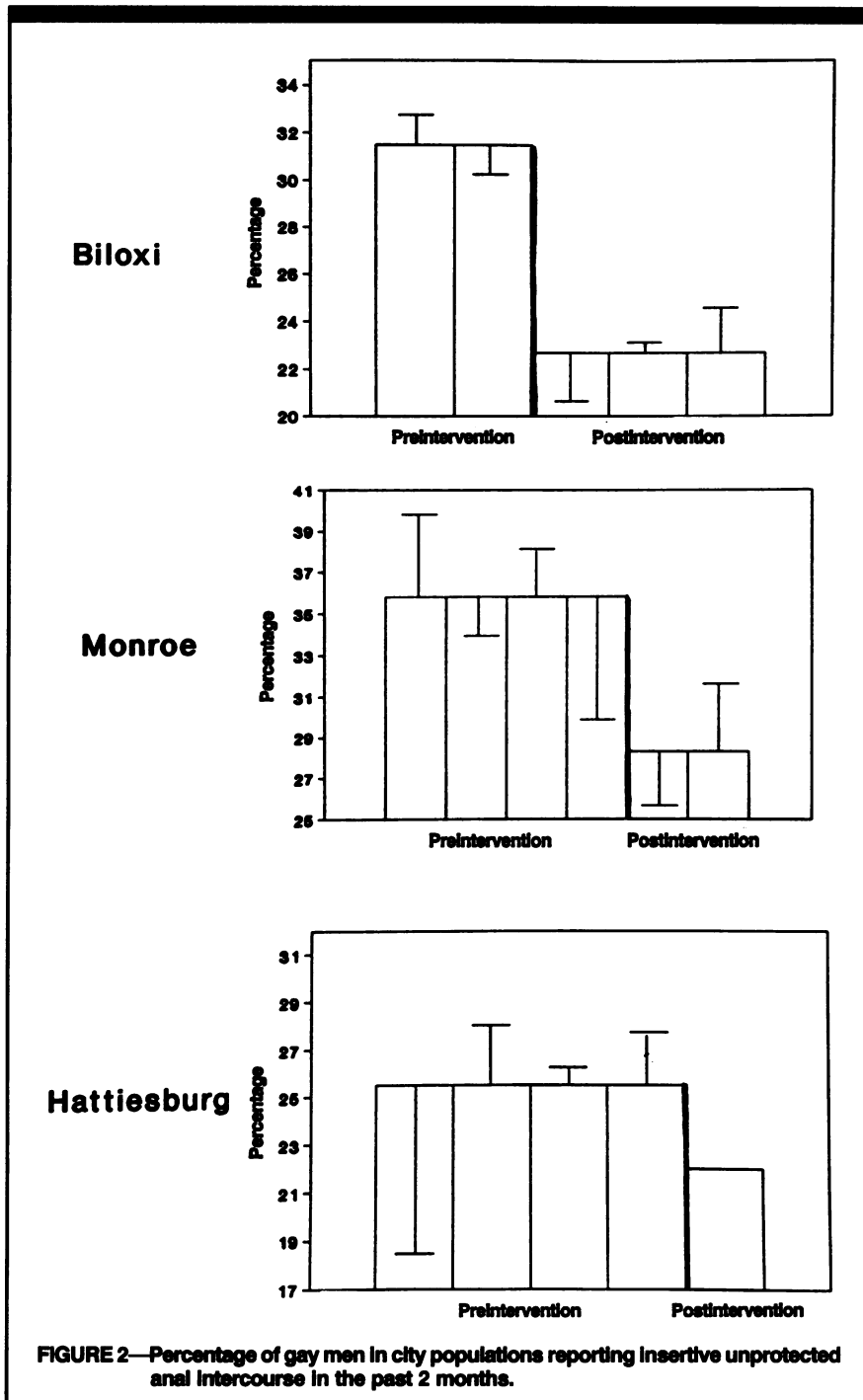
Before and after participating in the training program, opinion leaders individually role played how they would handle three situations that presented them with the opportunity to initiate conversation with a peer about AIDS risk precautions. For example, one enactment asked the opinion leader to role play what he or she would say to a friend who was sexually active and who was not believed to practice safer sex. Role plays were audiotape-recorded, after which two independent judges, who were uninformed as to the tapes' pre- or posttest status, rated the role plays for the frequency with which the opinion leader incorporated elements of effective health communication messages. Interrater agreements were high

( $r = .71$  to  $.90$ ) for elements of skill in the role plays and confirmed that opinion leaders learned to use skills such as identifying AIDS as a risk to men in that community (pre mean  $[M] = 0.9$  occurrences per conversation, post  $M = 1.5$  occurrences per conversation), explicitly identifying a high-risk sexual practice (pre  $M = 0.0$ , post  $M = 0.3$ ), recommending a specific safer sex precaution (pre  $M = 0.1$ , post  $M = 0.8$ ), personally endorsing the importance of risk reduction change (pre  $M = 0.0$ , post  $M = 0.3$ ), and handling the conversation with greater

overall social skills based on 10-point Likert scale ratings (pre  $M = 2.5$ , post  $M = 4.9$ ). This check confirmed that opinion leaders acquired the peer conversational effectiveness skills.

Opinion leaders also monitored the number of AIDS educational conversations they had with peers during a 17-day postintervention period. Monitoring records revealed that, for the intervention programs in all three cities, opinion leaders had an average of 6.1 peer conversations in the immediate postintervention period, confirming that the trendsetters





communicated health messages to others. We believe that the actual total number of opinion leader–peer conversations was actually much higher, but we used only a brief monitoring period in which to assess compliance.

*Effects of Intervention on Community Population Behavior*

Figure 1 shows the percentages of men in each city who reported occurrences of unprotected anal intercourse in the 2 months before each survey point.

Because of the lagged intervention design, each city had different numbers of baseline and postintervention survey points. The figure shows the average of all baseline and of all postintervention surveys for a city (indicated by the consolidated pre- and postintervention aggregate bars), and results of each individual survey point (indicated by a hatch mark above or below the bar). As Figure 1 shows, between 31% and 49% of men reported unprotected anal intercourse during the past 2 months at baseline in the three cities. Following step-

wise introduction of the intervention, the change in the mean percentage of gay men who engaged in this high-risk behavior from mean baseline was –24% for Biloxi ( $z = 2.29, P < .01$ ), –21% for Monroe ( $z = 1.97, P < .02$ ), and –15% for Hattiesburg ( $z = .79, P = \text{not significant [NS]}$ ).<sup>a</sup>

Figures 2 and 3 show changes in the percentages of men in the surveyed populations who engaged in unprotected anal insertive and receptive intercourse, respectively. These data reflect similar shifts in population behavior from mean baseline for both insertive anal intercourse (Biloxi: –29%,  $z = 2.50, P < .01$ ; Monroe: –22%,  $z = 1.79, P < .04$ ; and Hattiesburg: –14%,  $z = .66, P = \text{NS}$ ) and receptive anal intercourse (Biloxi: –26%,  $z = 2.08, P < .02$ ; Monroe: –27%,  $z = 2.11, P < .02$ ; and Hattiesburg: –28%,  $z = 1.38, P < .08$ ). While there was some variability across individual survey points, which was probably due to “noise” or variability associated with the cross-sectional sampling procedure, the overall effects were detectable from the baseline to the postintervention periods in each city, confirming that the observed pattern of behavioral change resulted from the intervention.

Figure 4 shows the percentages of all anal intercourse occasions when condoms were reportedly used by population members. For both Biloxi and Monroe, increases in condom use were evident between the pre- and postintervention survey points (Biloxi: +15% from mean baseline; Monroe: +17%). In Hattiesburg, a smaller magnitude of change (+4%) was evident. However, the Hattiesburg population exhibited higher baseline rates of condom use and lower baseline rates of unprotected anal intercourse than the other two cities.

Changes in the number of sexual partners reported by survey respondents in the past 2 months were also investigated. The Biloxi population showed a reduction in men reporting more than one sexual partner from 43% at mean baseline to 37% ( $z = 1.29, P < .1$ ), as did the Monroe population, decreasing from 41% to 33% ( $z = 1.69, P < .05$ ), while the Hattiesburg population remained unchanged at 38%. However, in Hattiesburg, reductions were found for the percentage of

<sup>a</sup>Binomial z-scores were calculated to test for significant changes in proportion from pooled preintervention to pooled postintervention survey points, and significance levels are for one-tailed tests.

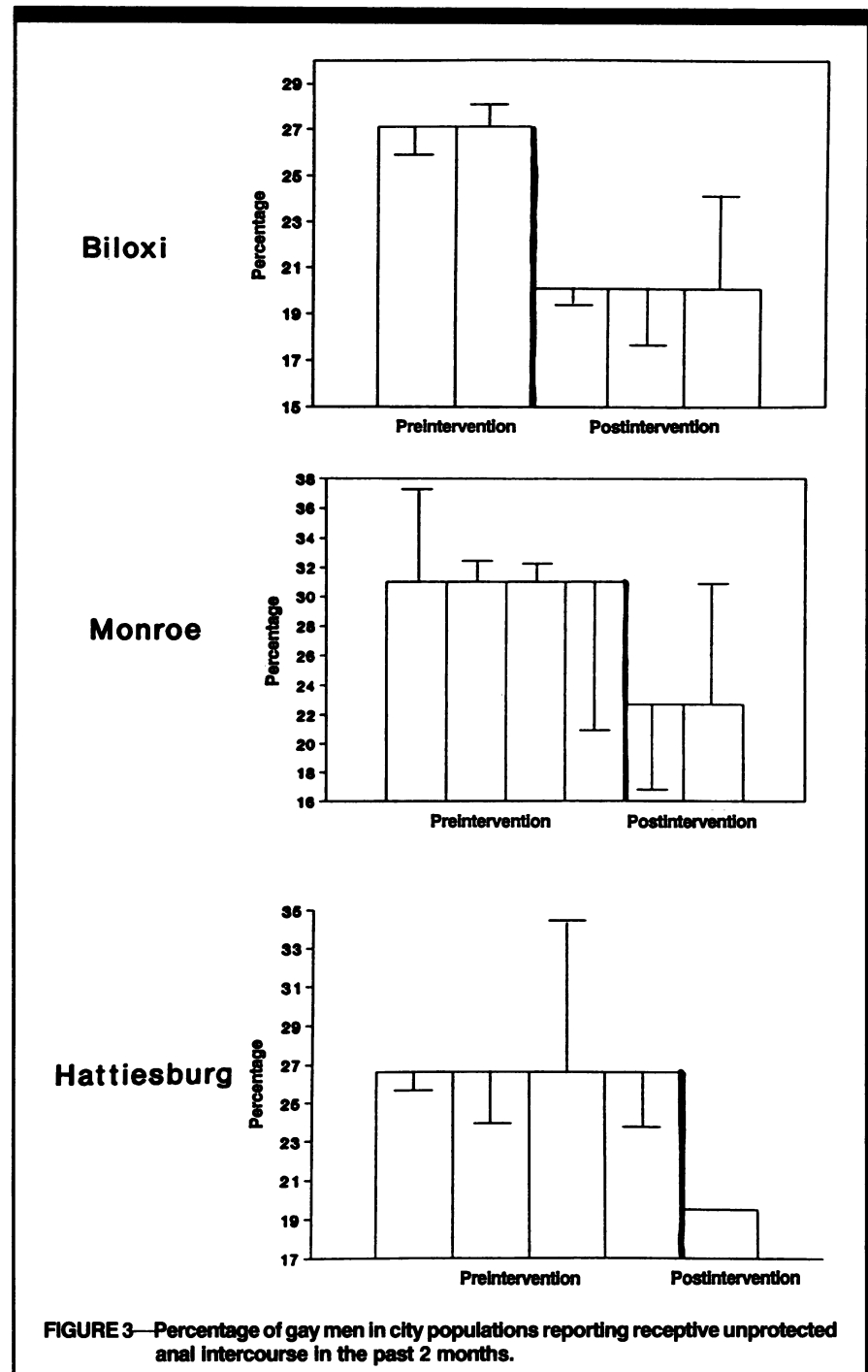
men who had unprotected anal intercourse with multiple partners (from 8% in the 2 months before baseline surveys to 4% in the 2 months before postintervention surveys) or who had unprotected receptive anal intercourse with multiple partners (from 6% at baseline to only 1% at postintervention survey points).

Change was also examined on the measure of perceived social norms concerning peer acceptance of safer sex and precautionary behaviors. There were increases in social norm perception measure scores from mean baseline survey points to mean postintervention survey points in all three cities (Biloxi pre M = 15.88, post M = 16.72, 95% confidence interval [CI] = 16.02, 16.65; Monroe pre M = 16.49, post M = 17.40, 95% CI = 16.47, 17.13; Hattiesburg pre M = 16.56, post M = 17.92, 95% CI = 16.48, 17.27). These data confirm that the intervention produced shifts among gay men in each city in the perceived social acceptability of insisting upon safer sex practices.

Finally, because the trained opinion leaders were also members of the surveyed city populations, we isolated their postintervention surveys (7% of all completed surveys) from those of the population members who were uninvolved in the training (83% of all completed surveys). We found that, at the first survey following intervention in each city, while persons who had participated in the training were less likely to report engaging in unprotected anal intercourse than the surveyed population as a whole (19% vs 39%), they did not otherwise differ in risk characteristics. (E.g., both populations reported condom use in 73% of their anal intercourse occasions.) Thus, shifts observed in population behavior were disseminated throughout each city's population and were not simply the result of changed behavior on the part of the trained opinion leaders themselves.

## Discussion

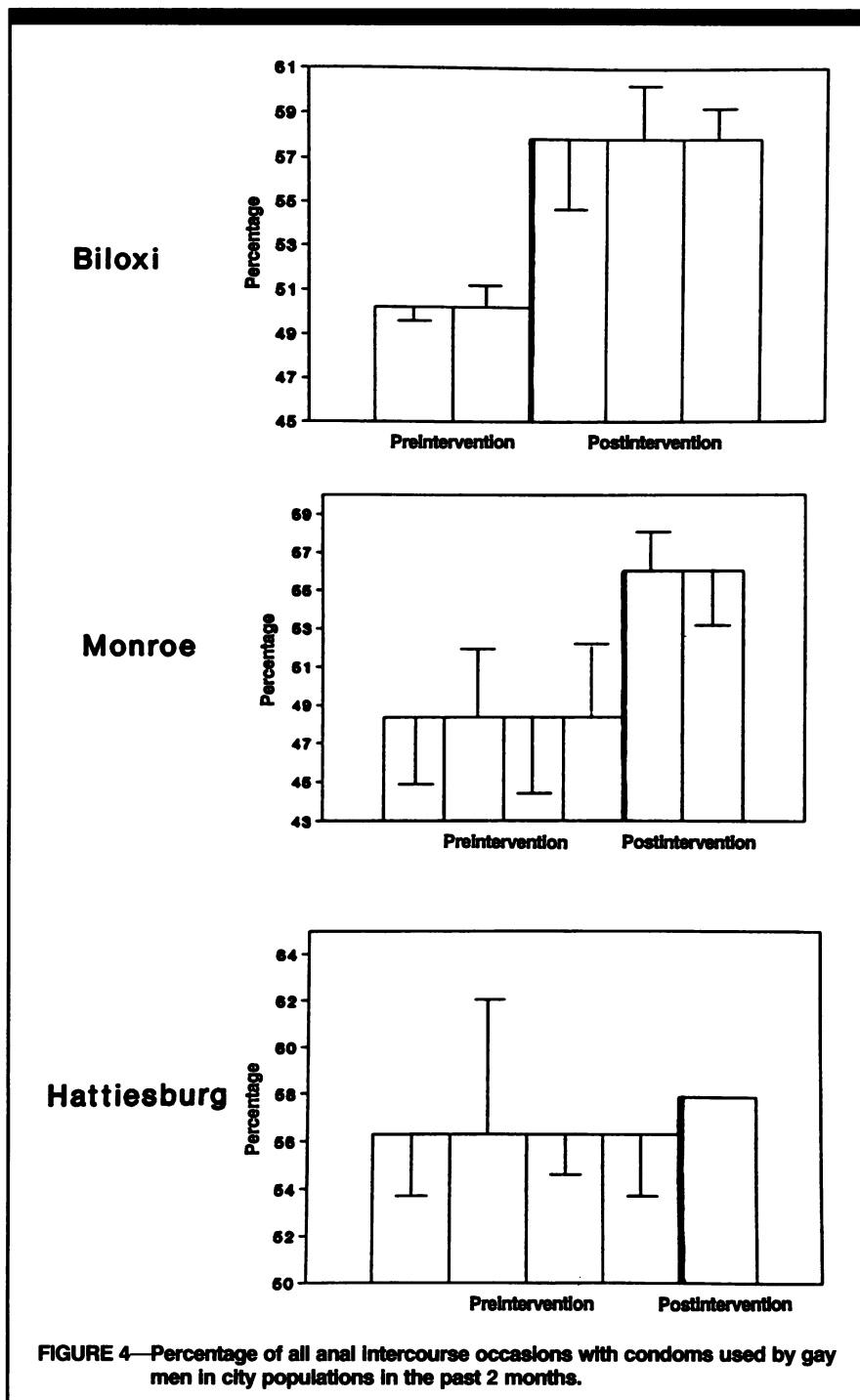
AIDS education efforts have been under way in the United States for a number of years and have increased the knowledge level of most adults concerning risk behaviors for HIV infection. There is now a need to extend community-level primary prevention to better address factors that influence whether persons *implement* the behavioral changes about which they have become knowledgeable. One strategy for doing so is to redefine behavioral norms within vulnerable populations to favor in-



creased precaution taking. If risk reduction is an expected and accepted norm within one's peer and social network, individuals will be encouraged to adopt precautionary patterns. The high levels of risk behavior initially found among gay men in these small cities substantiate the need for such an approach.

This study establishes and extends the generality of a community intervention model that was identified as promising in earlier, preliminary research.<sup>5</sup> To the best of our knowledge, this constitutes the first experimentally controlled evalu-

ation of a mass-level AIDS/HIV prevention effort undertaken in multiple cities. The effects of the intervention on the primary risk behaviors of importance were quite robust for a community-level mass approach; the magnitude of behavioral change—with reductions of 15% to 29% from baseline levels for the proportion of men in a population who engaged in any unprotected anal intercourse—compares favorably with that usually found in population-based prevention programs in other public health areas. Because all of the cities' gay communities had standard,



ongoing AIDS education programs before and throughout the intervention (such as AIDS brochures and posters in bars), the effects produced by the experimental intervention exceeded what would be expected through usual “passive” education campaigns alone.

Very similar patterns were found in Biloxi and Monroe; in Hattiesburg, however, the population response was substantial in some key respects, particularly the 28% reduction in the proportion of men who engaged in any unprotected re-

ceptive anal intercourse, but not in others, such as absence of change in the number of different sexual partners. The Hattiesburg population was the youngest of the three and included many college students; this may account for the absence of change on the measure of multiple partners. However, the important qualitative change found in sexual practices—with only 1% of men reporting unprotected anal receptive intercourse with more than one partner at the postintervention survey points—underscores the impact of inter-

vention on the single behavior of greatest significance for HIV risk reduction among gay men.

As a field investigation, this study has a number of limitations, including imprecision associated with sampling a community population with repeated cross sections, inability to track the behavior of specific individuals over time, and limited strategies for distinguishing population responders from nonresponders to the intervention. Although it is possible that transients present in a city population at a specific survey point could have distorted population risk behavior levels, the predictable pattern of change across cities following sequential intervention makes this unlikely. The size of the gay community samples surveyed in these cities was relatively small. However, compactness of population was deemed necessary to identify intervention effects reliably in this initial experimental field trial. As in most HIV behavioral research, this study relied primarily on respondent self-reports of behavior. While anonymous surveying procedures were used to minimize response bias and while other studies have established the validity and reliability of similar HIV risk behavior self-report procedures,<sup>10,11</sup> it will be important for future research to corroborate reported behavioral change with indices such as change in local sexually transmitted disease incidence, condom purchases, or HIV antibody test requests. The specific mechanisms responsible for the intervention effect also require further study. They may include diffusion of innovations that were modeled and endorsed by the opinion leaders,<sup>6</sup> effects of having the popular people prompt their peers and advise their friends on steps for implementing behavioral change, increased salience and personalization of risk perceived by population members, or some combination of these factors. While the risk behavior shifts following the intervention were notable because they were disseminated across entire population samples, it seems evident that this form of intervention is only one of many approaches needed in a comprehensive effort to prevent AIDS/HIV.

Small-city gay men constitute a relevant population for intervention of this kind. However, this mode of intervention may prove equally applicable to other populations, including young adolescents, college students, intravenous drug users, populations in developing countries, and other communities with closely knit social influence networks. The intervention’s



promising effects shown here and the cost efficiency of this intervention approach merit continued field trials with other populations. □

### Acknowledgments

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### Errata

In: Haglund B, Cnattingius S. Cigarette smoking as a risk factor for sudden infant death syndrome: a population-based study. *Am J Public Health*. 1990;80:29–32.

The total number of sudden infant death syndrome cases included in the study was reported incorrectly. The correct number is 263 cases (0.9/1000 live births), instead of 190 (0.7/1000 live births). After reanalyzing the data, the authors have concluded that the relationship between maternal smoking and sudden infant death syndrome is unchanged.

In: Salive ME, Cornoni-Huntley J, LaCroix AZ, Ostfeld AM, Wallace RB, Hennekens CH. Predictors of smoking cessation and relapse in older adults. *Am J Public Health*. 1992;82:1268–1271.

The legend in Table 3, “Three-Year Smoking Cessation Rates,” should have read “Six-Year Smoking Cessation Rates.”