

Increases in Calls to the CDC National STD and AIDS Hotline Following AIDS-Related Episodes in a Soap Opera

By May G. Kennedy, Ann O'Leary, Vicki Beck, Katrina Pollard, and Penny Simpson

In the United States, minority women are at risk of HIV infection and comprise a disproportionate share of daytime soap opera viewers. In August 2001, a soap opera subplot delivered HIV prevention messages to viewers and displayed the National STD and AIDS Hotline's toll-free number (800-342-2437) after 2 episodes. On both days, the number of attempted calls to the Hotline in the 1-hour time slots during and just after the 30-minute broadcasts rose dramatically. These increases in information-seeking behavior are consistent with predictions based on social cognitive theory, the health belief model, and various models of information processing. The increases also provide support for the Education-Entertainment approach and underscore the importance of a productive partnership between public health and the entertainment industry.

By the end of December 2002, the cumulative number of AIDS cases reported among those 13 years of age and older in the United States had reached 877,275; the number of cases among women was 159,271 (Centers for Disease Control and Prevention [CDC], 2003). African Americans constitute approximately 12% of the population (U.S. Census Bureau, 2003); however, among women, 59% of the cases of AIDS reported in the United States and 66% of the cases of HIV reported by the 39 states and cities with confidential HIV reporting have been among African Americans (CDC, 2003). Of the women whose route of HIV infection is known, most were infected heterosexually (CDC, 2003).

May G. Kennedy (PhD, Georgia State University) is a communication analyst for the Centers for Disease Control and Prevention (CDC). Ann O'Leary (PhD, Stanford University) is a senior behavioral scientist at the Division of HIV/AIDS at CDC. Vicki Beck is director of Hollywood, Health & Society, a CDC-funded program at the University of Southern California, Annenberg Norman Lear Center. Katrina Pollard is a health communications specialist for CDC's National Center for Environmental Health. Penny T. Simpson is a research analyst for the American Social Health Association. The authors would like to thank Ron Weaver, Bradley Bell, Cynthia Popp, and Teresa Zimmerman of the *Bold and Beautiful* for their enthusiastic support and creative collaboration on this project. We would also like to thank Sonny Fox for his health advocacy in the Hollywood soap opera community and John Williamson of the Division of HIV/AIDS at CDC for his statistical calculations.

Copyright © 2004 International Communication Association

The barriers to reducing HIV risk among sexually active women have received a substantial amount of research attention; intrapersonal and social barriers are beginning to be understood (O'Leary, 2000). Prevention interventions using small groups and peer outreach have been based on the emerging understanding of the barriers women face, and some of these interventions have been successful in reducing HIV risk (see O'Leary & Wingood, 2000, for a review). Unfortunately, HIV prevention resources are far from sufficient to provide such face-to-face programs to all women at risk of HIV. There is a great need for supplementary and alternative prevention strategies for reaching broad segments of the population at risk.

Mass media are efficient and promising communication channels for prevention messages (Jason, 1998), and nationally televised broadcasts reach millions of Americans. Television broadcasts have been shown to increase knowledge of health issues (Brodie et al., 2001; CDC, 1992), promote attitudes and norms that support prevention (Kalichman, 1994; Siska, Jason, Murdoch, Yang, & Donovan, 1992), model prevention behaviors (Basil, 1996), and elicit prevention behaviors (Andrews, McLeese, & Curran, 1995; Brodie et al., 2001; Fan, 1993; Myhre & Flora, 2000).

Compared with other broadcast formats (e.g., free-standing public service announcements [PSAs], news shows, and evening dramas), daytime television dramas or "soap operas" may offer several advantages for the dissemination of HIV prevention messages to high-risk women. The first advantage is that soap operas are relatively efficient in reaching minority women. African American and Hispanic households watch more daytime television than other audiences (averages of 683 minutes, 605 minutes, and 456 minutes, respectively; Nielsen Media Research, 2002). Among respondents to the 1999 Healthstyles survey, 31% of African Americans, 25% of Hispanics, and 17% of whites reported that they were regular soap opera viewers (i.e., that they watched at least twice a week; Beck, Pollard, & Greenberg, 2000). The second advantage is that soap operas may be viewed as a more credible source of health information by minority women than by other racial and ethnic groups. Of women who reported regular soap opera viewing, 53% of all women, 56% of Hispanic women, and 69% of African American women said that they had learned something about diseases or how to prevent them from soap operas in the last year (Beck et al., 2000). Finally, regardless of viewer race or ethnicity, the expectation that daytime soap operas would be an unusually effective channel of HIV-relevant communication is consistent with several theories and with the findings of related bodies of research.

Theoretical and Empirical Support

Miguel Sabido pioneered the dissemination of educational messages through broadcasts of serialized novellas, a format analogous to U.S. soap operas but usually less long-running. His approach has come to be known as Entertainment-Education (Singhal & Rogers, 1999). Used predominantly in developing countries to date, Entertainment-Education employs an entertaining format to engage a large

audience, eventually weaving in educational messages designed to inform audiences, influence their attitudes about the educational issue, and persuade them to adopt pertinent behaviors (Papa et al., 2000). Some characters perform a recommended behavior and are rewarded with prosperity and happiness, while other characters do not adopt the behavior and meet disastrous ends. A third type of character, constructed to inspire audience identification, observes all of this, strives to overcome various obstacles to performing the behavior, ultimately succeeds, and is rewarded in a manner valued by the target audience.

These elements of Entertainment-Education were intentionally based on Albert Bandura's social cognitive theory (Bandura, 1986, 1994). Social cognitive theory postulates that learning occurs when an individual observes someone else performing a behavior and experiencing the consequences of that behavior. This observational learning influences the learner to perform a behavior by creating a positive outcome expectancy, the expectation that a certain action will result in a positive outcome, and by enhancing self-efficacy, the belief that one is able to perform a behavior. Self-efficacy is thought to be enhanced when the learner identifies with the role model—the individual who performed the behavior and experienced its consequences directly. The learner is considered most likely to engage in repeated attempts to perform the new behavior when two conditions hold. First, the behavioral role model achieves a behavioral goal through effortful mastery, defined as success following persistence in the face of barriers. Second, the reward for succeeding is something the learner values.

Other relevant theoretical models (e.g., McGuire, 1989; Prochaska, DiClemente, & Norcross, 1992) have maintained that individuals who are presented with behavioral recommendations go through a series of information processing and assessment steps before actually performing the behavior. Although an individual can travel recursively through these steps, the route is usually described as a unidirectional linear progression (Papa et al., 2000). Typically, the message recipient (a) becomes aware of and actively attends to a message, (b) comprehends and remembers the message, (c) considers the message, (d) decides to follow the recommendation, and (e) takes prerequisite or preliminary action before (f) actually exhibiting behavior in line with the message.

Taking the first step—becoming aware of the message—is facilitated by sending messages through channels to which a target audience attends; the point that soap operas are efficient channels for reaching high-risk women has already been made. Attention and persuasion are encouraged when messages are delivered dramatically by a character that viewers care about (O'Brien & Albrecht, 1992; Papa et al., 2000); soap operas are very dramatic, and soap opera viewers are often deeply involved with the characters on their favorite shows (Dines & Humez, 1995). In fact, some viewers use soap opera websites to advocate for particular plot developments (see www.cbs.com/daytime/bb for examples). A serialized format presents the opportunity to repeat and develop prevention themes, strategies that have been shown to enhance both comprehension and retention (Waugh & Norman, 1965). Moreover, recall of prevention messages may be enhanced if the messages are presented in the context of a storyline that viewers follow over time (Brinson & Brown, 1997).

Some would argue that, if viewers are alone when exposed to television messages about an interpersonal behavior, it is unlikely that change in the interpersonal behavior will result. However, Papa and his colleagues (Papa et al., 2000) point out that many media messages are processed in a social context. Conversations and other social interactions stimulated by the media can create new impetus (e.g., collective efficacy) and opportunities for behavior change. Also, Entertainment-Education sparks parasocial interaction (e.g., forming a "relationship" with a fictional character or talking to the television; Papa et al., 2000; Pfau, 1990), which may enhance identification and efficacy. Parasocial interaction fosters active message processing (Papa et al., 2000), a goal-oriented activity that involves a decision to pay attention and the exertion of mental effort to evaluate arguments and seek information (Green, Lightfoot, Bandy, & Buchanan, 1985; Park & Smith, 1989). Active processing improves retention (Larsen, 1991) and may lead to more behavior change than does passive processing (Parrott, 1995).

When a health message is easy to follow, self-efficacy and skill modeling are less relevant than they are for complex behaviors. The health belief model (Becker, 1974) has been shown to predict behaviors that require little skill, such as asking for health information (Aiken, West, Woodward, & Reno, 1994; Champion & Miller, 1996; Graham, 2002; Jacobs, 2002). According to the health belief model, health behavior is driven primarily by the perceived seriousness of a disease and one's perceived vulnerability to the disease. Once these factors obtain, an individual is motivated to attempt to reduce the health threat in response to cues to action. Having fewer constructs, this theory may provide a simpler explanation for the influence of serialized dramas on health-relevant behavior than social cognitive theory does. However, predictions based on either the health belief model or social cognitive theory would often be consistent because perceived vulnerability can be construed as an outcome expectancy.

There is not only theoretical support for the Entertainment-Education approach, but also empirical evidence that it can be effective. Relatively weak designs from at least a dozen studies in developing countries suggest that exposure to this kind of serialized novella increases levels of target behaviors (Papa et al., 2000), and there is now confirming evidence from a carefully controlled field experiment. A radio soap opera employed the Entertainment-Education approach to promote HIV risk avoidance in the relatively uncrowded media environment of Tanzania. Compared with respondents in a comparison district in which the soap opera was not broadcast, respondents in the district in which the program was aired reported significant increases in attitudes and behaviors that are consistent with HIV prevention (Rogers et al., 1999).

There is little remaining question that Entertainment-Education effects can be achieved in the developing world, but there are many open questions about the mechanisms involved. An ambitious study currently underway in several African countries is studying the mechanisms of role modeling and assessing the value of community reinforcement of soap opera messages about HIV/AIDS (Galavotti, Pappas-DeLucca, & Lansky, 2001).

A Domestic Entertainment-Education Program

There has been much less study of the potential of Entertainment-Education in the United States, where no nationally broadcast soap opera has employed the full approach. However, some Hollywood writers and producers have been willing to collaborate with public health professionals to embed accurate, timely prevention messages and scenarios into major network programming. Several of these collaborations have grown out of a broad entertainment industry outreach program initiated by CDC. CDC now works in partnership with the Norman Lear Center of the University of Southern California (see www.cdc.gov/communication/entertainment_education.htm) to engage producers and writers by means of regular mailings of health-related resource materials, face-to-face meetings to discuss potential storylines that could address health issues, and an award program called "The Sentinel for Health Award for Daytime Drama." This award is given to the soap opera with the storyline that does the best job of informing viewers and motivating them to make healthy choices.

After collaboration with CDC scientists, a long-running, televised, daytime soap opera, *The Bold and the Beautiful* (*B&B*), introduced a subplot about HIV. The Nielson rating for *B&B* during the week of July 30, 2001, through August 3, 2001, was 4.4 (4.4% of the 102.2 million U.S. households with televisions, or 4,496,000 households). The rating indicates that millions of *B&B* viewers saw an attractive young Hispanic man get tested for HIV and learn that his HIV serostatus was positive. He told his doctor he had used condoms consistently with recent sexual partners (all of whom were women), disclosed his positive HIV serostatus to them, and encouraged them to be tested for HIV. He also disclosed his serostatus to the woman that he would eventually marry. He then proceeded to overcome emotional and interpersonal obstacles to living a full, satisfying life. Clearly, the storyline embodied several key elements of the Entertainment-Education approach.

The Present Study

The director of the American Diabetic Association (Graham, 2001) wrote a letter to CDC reporting a large surge in the volume of callers to a helpline after a character from a topically pertinent soap opera episode displayed the helpline number. CDC officials had noted such surges in the past. Documenting this kind of association formally was seen as a feasible way to begin an empirical examination of the impact of disseminating health messages through collaborations between public health agencies and private entertainment media partners.

This study examined data on the number of calls made to the CDC National STD and AIDS Hotline's English Service (hereinafter referred to as "the Hotline") following *B&B* episodes with powerful AIDS-relevant themes. Calling the Hotline is an important health information-seeking behavior. Based on the theory, empirical findings, and anecdotal evidence reviewed above, we made three directional hypotheses:

H1: Presenting the Hotline number immediately after *B&B* episodes with an HIV theme would be associated with an increase in the number of calls to the Hotline during that time slot relative to other time slots on that same day.

H2: Presenting the Hotline number immediately after *B&B* episodes with an HIV theme would be associated with an increase in the number of calls to the Hotline relative to the number of calls during that time slot on other days.

H3: The number of calls made on the 2 days when the Hotline number was presented during *B&B* episodes with HIV themes would be greater than the number of calls made on days when other kinds of shows were presented.³

There was also interest in the kinds of topics callers brought up during calls. A final, qualitative, exploratory research question was this:

RQ1: When Hotline callers say they called because of the *B&B* episode or a PSA on *B&B*, what kinds of issues will they bring up?

Method

Participants

During 2001, all calls to the Hotline originating within the United States were tallied by the Federal Technology Service 2000 system and AT&T. These calls were counted whether or not the callers actually reached the Hotline or spoke with Hotline staff. Participants in this study were the individuals who attempted to call the Hotline.

There were 12–15 trained Hotline staff members answering calls during the period that the show aired.¹ When there was high caller volume, some callers heard a taped message asking them to stay on the line until a staff member was available. When the hold queue was full, callers were asked to call back at a later time. It was not possible to distinguish repeat callers from those who called once in the call attempt data presented in this paper.²

Design and Procedure

On August 3, 2001, the *B&B* episode included a male character's diagnosis of HIV. On August 13, 2001, the character disclosed his positive HIV serostatus to his

¹ Callers who speak Spanish or who ask to do so are transferred to a Spanish-speaking health information specialist.

² For a period of time during 2001, because of a change from one system to another, an automatic tally of the number of unique callers was unavailable to the Hotline. Such data became available again in 2002.

³ Numerous other television broadcasts during the 2001 calendar year dealt with the topic of HIV and/or presented the Hotline number. However, those shows were not the sort of serialized drama highlighted by the Entertainment-Education approach and thus might not be expected to have as great an impact on viewers.

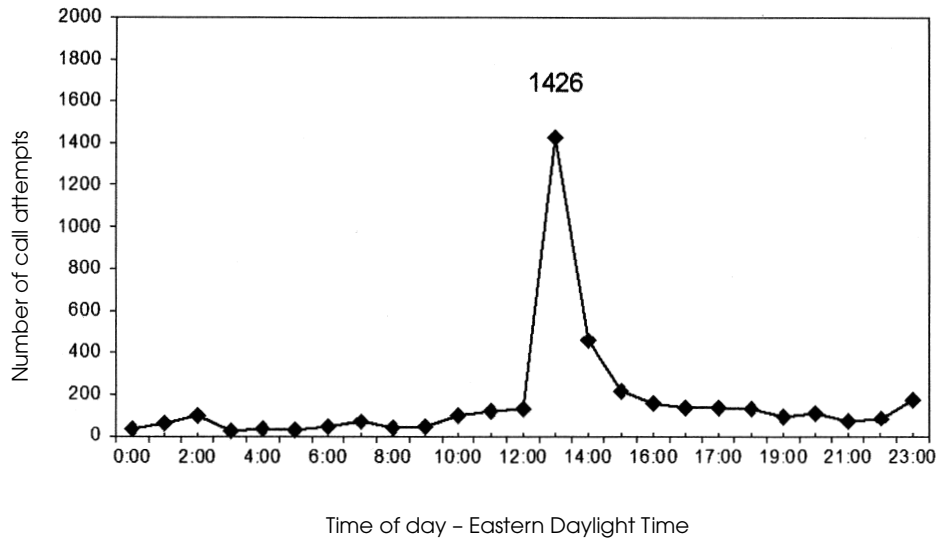


Figure 1. Originating call attempts to the CDC National STD and AIDS hotlines (800-342-2437) by time of day, August 3, 2001.

fiancée. During the last 5 minutes of each of these two episodes, a PSA was aired. It displayed the toll-free number of the Hotline (800-342-2437) while the actor who played the HIV-positive character invited viewers to call the Hotline for answers to questions about HIV or AIDS. Hotline staff members were notified of the issues to be addressed in the *B&B* HIV storyline and of the days when the PSA would be aired. The episodes were broadcast at 1:30 p.m. Eastern Daylight Time (EDT) and at 12:30 p.m. Central, Mountain, and Pacific time. Calls were tallied by EDT because the Hotline is physically located on the East Coast.

Following the Hotline's standard procedure, both active and passive survey data were collected from a random sample of callers. One in 15 "productive" calls (those that result in service provision) was selected for the sample by a computer program. The staff member asked the selected caller for permission to be interviewed; no data were recorded if the request was not granted. No identifying information was requested or recorded. The standard part of the interview included questions about caller demographics, whether the caller had ever called before, and where the caller had heard about the Hotline. Passive data recorded after these calls included the first question asked or topic discussed during the call, the nature of the service rendered (e.g., referral), and any STD history that the caller mentioned. During August 2001, with approval from the Office of Management and Budget, interviewed callers who said that they heard about the Hotline through a television show were asked which show, how frequently they watched, whether they intended to make any changes or take any action as a result of seeing the show, and what kind of action they intended to take.

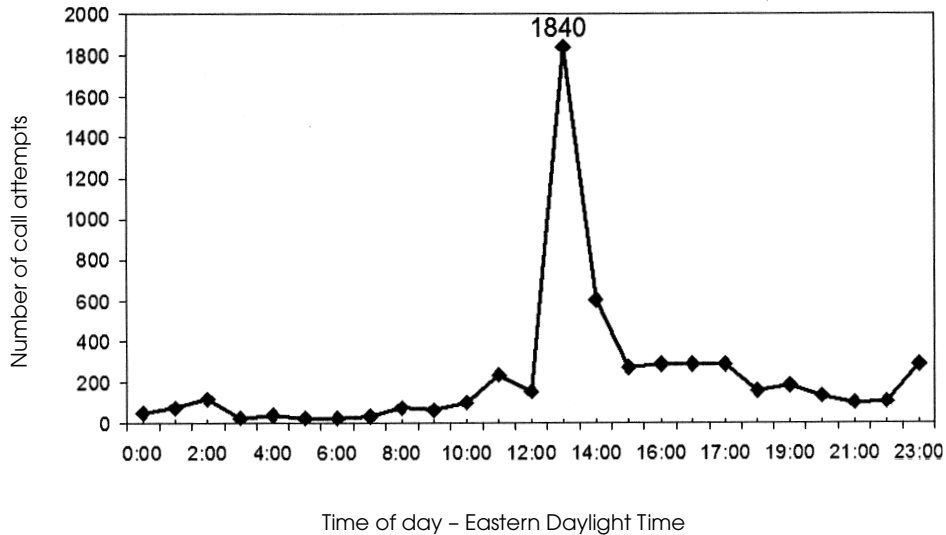


Figure 2. Originating call attempts to the CDC National STD and AIDS hotlines (800-342-2437) by time of day, August 13, 2001.

Results

Call Attempts

Figures 1 and 2 show Hotline call attempt volume by time of day for the 2 days on which the PSA was displayed. On both days, very large increases, or spikes, in numbers of originating call attempts were observed in the time slot during and immediately after the *B&B* broadcast. Whether or not the number of calls per hour was assumed to be normally distributed, the spikes were found to be significantly higher than call levels at other times of day ($z = 14.63$, $p < .0001$; rank test, $p = .04$). This result constituted support for H1.

On August 3, the Hotline received 1,426 calls originating between 1 p.m. and 2 p.m.; 37% of the calls that day were made in the *B&B* time slot. The day before, there had been only 88 call attempts during that time slot. On August 4, between 1 p.m. and 2 p.m., there were 108 call attempts. There was an even higher spike on August 13; 1,840 calls originated during and shortly after the *B&B* episode. On the previous day, only 94 calls had been made between 1 p.m. and 2 p.m., and on August 14, 234 calls were made during that hour. The number of calls in the spikes were averaged and compared with the average number of calls during that time period on comparison days in a one-tailed statistical test. There were significantly fewer calls in the *B&B* time slot on comparison days (M of 6 comparison days = 116; Wilcoxon's $z = 1.83$, $p < .03$), so H2 was supported.

There was a possibility that these spikes were a function of time of the month or month of the year, so we examined call attempt patterns on July 2, 3, 4, 12, 13,

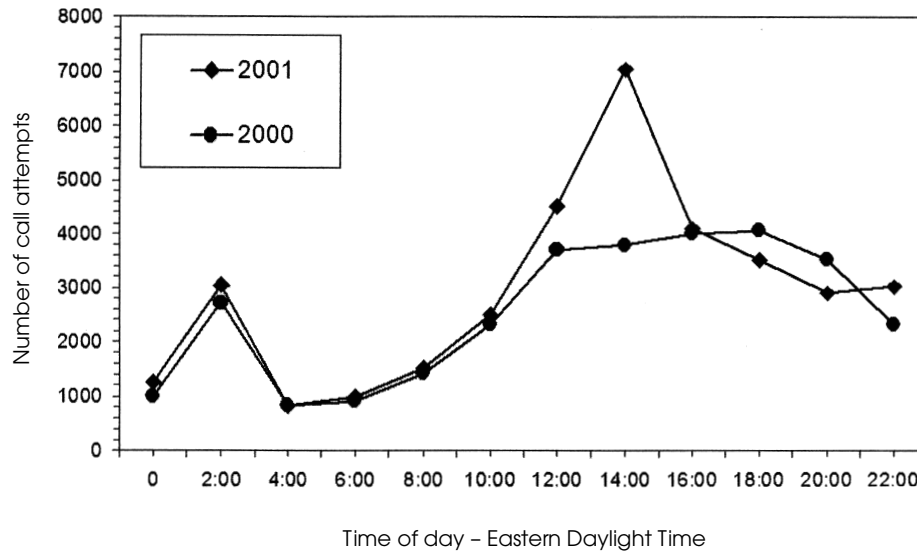


Figure 3. Comparison of originating call attempts to the CDC National STD and AIDS hotline (800-342-2437) during August 2000 and August 2001.

and 14, 2001, and the same days in August 2000. For the non-*B&B* HIV episode days, numbers of call attempts per daytime time slot fluctuated, but the highest call level during any daytime period was no more than 200 calls higher than the next highest level for that day (data not presented here). In contrast, the call levels for the *B&B* time slots on August 3 and 13, 2001, were more than 1,000 calls higher than the next highest levels for those days. Figure 3 compares the numbers of originating call attempts during the months of August 2000 and August 2001. The spike in call attempts during the *B&B* time slot is evident even in the monthly data from 2001.

Figure 4 presents the daily number of originating call attempts to 800-342-2437 throughout the 2001 calendar year. Some of the televised broadcasts with AIDS themes are shown. In addition to the *B&B* episodes, the broadcasts include (a) *60 Minutes*, a prime-time major network news magazine program that had a Neilson rating of 10.1 (10.32 million households) during the first week of August 2001, (b) specials about AIDS televised on MTV (a cable channel that targets youth) that displayed the Hotline number, (c) a PSA with the Hotline number and a message from the U.S. surgeon general, and (d) three PSAs that included a number (866-RAP-IT-UP) linked to the Hotline and were aired repeatedly during a Kaiser Family Foundation-sponsored HIV/AIDS prevention campaign on BET, a cable channel that targets African American audiences.

More originating Hotline call attempts ($n = 5,313$) were made on the day that the second *B&B* episode aired the Hotline number than were made on any other single day during the 2001 calendar year. The next highest number of call attempts ($n = 4,570$) occurred on June 27, National HIV Testing Day, when many

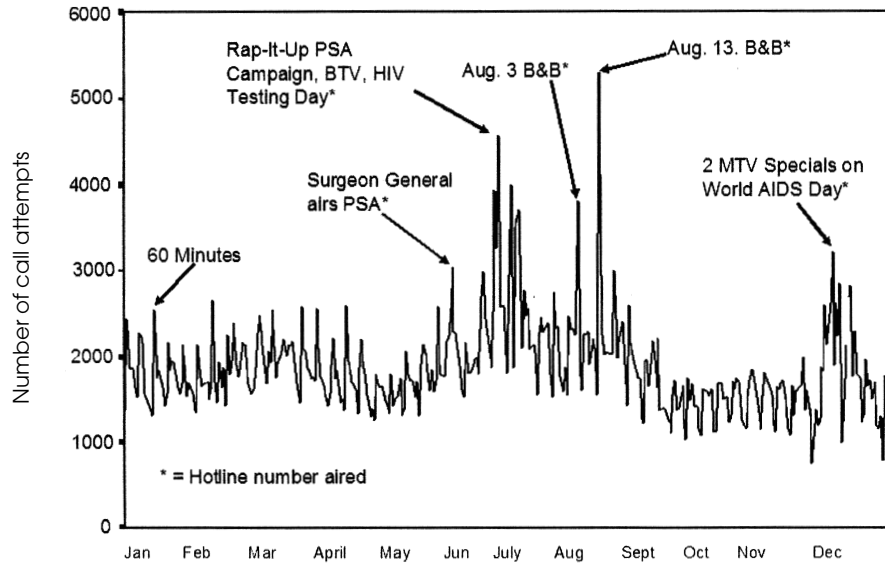


Figure 4. Daily originating call attempts to CDC National STD and AIDS hotline (800-342-2437, January–December 2001.

media sources provided the Hotline number to the public. The running record contains dozens of other spikes, most of which reflect a recurrent weekly pattern of calls. Other AIDS-related broadcasts and events (e.g., disclosure by a national celebrity of positive HIV serostatus) may have been responsible for higher-than-average calling levels, but an investigation of such associations is beyond the scope of this analysis. The nonparametric Wilcoxon rank sum test was used to determine whether the combined call volume on the 2 days when the Hotline number was aired on *B&B* was significantly higher than the peaks on the other 361 days in the data set. The rank sum score for peaks on the 2 days of interest was calculated and the probability that peaks on these 2 days were significantly higher than the peaks on other days was estimated. The two-sided probability ($p = 0.016$) was obtained by comparing a standardized test statistic to the standard normal distribution, supporting H_3 .

Active Interviews

On the 2 days that the Hotline number was broadcast, caller volume was so high during and immediately after the *B&B* time slot that the capacity of the Hotline was overwhelmed. Attempted calls were tallied electronically as described above, but only a small fraction of them could be serviced by a health information specialist. Consequently, the number of active interviews with individuals who saw the show is a misleadingly low figure. Of the 1,904 callers who were selected for

interviews during August 2001, 1,430 provided active interviews. Of these, only 28 callers indicated that they had heard about the Hotline from a PSA on *B&B* or on the soap opera itself. In all, 194 of the callers surveyed that month said they got the Hotline number from a TV PSA or program. More callers (just under 30%) said they got the number from the telephone book than from any other single source—a typical finding of routine interviews of Hotline callers.

Thirty-six percent of the callers who mentioned *B&B* identified themselves as African American. The majority of the callers reported being first-time callers, female, and prompted to call by the topic of positive HIV serostatus disclosure in the show. Fifty-seven percent said that they intended to make a change or take action after seeing the show; of those, 44% said that they intended to “get tested” and 28% said that they intended to “use condoms.” The number of callers was too small to provide a satisfying answer to RQ1.

Discussion

After the Hotline number was displayed at the end of two August 2001 episodes of *B&B* that dealt with AIDS themes, Hotline call volume rose dramatically, as predicted. It is reasonable to conclude that many members of the American public can be motivated to seek health information by a dramatic, televised storyline that addresses health issues.

The increase in calls did not appear to be a regular temporal phenomenon. Similar spikes in call attempts were not observed during the analogous time slots on the same days the previous month, July 2001, or on the same days in August the previous year.

Compared with call spikes associated with other kinds of television broadcasts in 2001 that contained AIDS-relevant information, the *B&B* spikes were higher. Of course, it was not possible to vary comparison shows systematically, and some of the other broadcasts that dealt with HIV/AIDS during 2001 (e.g., *60 Minutes*) did not include the Hotline number. Although most respondents to routine Hotline surveys report getting the number from the telephone book, viewers of broadcasts that did not provide the number may have been unaware of its existence. Even if they knew there was a Hotline, finding its number in a phone book is an extra information-seeking step that would probably depress call numbers. Nonetheless, the demonstrated advantage of the soap opera context is striking, if not definitive.

As a group, these outcomes provide support for the elements of the Entertainment-Education approach in the HIV storyline on *B&B* and are consistent with several information-processing models and social cognitive theory. Moreover, social cognitive theory could be used to explain why the second *B&B* spike was higher than the first. In the second *B&B* episode, the female fiancée character may have sparked deeper identification among the predominantly female audience members than did the male and professional characters depicted in the first episode. She may have prompted more self-efficacy as she vowed to find out all there was to know about HIV and AIDS.

Although this study was a “natural experiment” not designed to test particular theoretical mechanisms of behavior change, the present findings seem to fit the health belief model better than social cognitive theory. A likely effect of exposure to the heterosexual transmission of HIV in the storyline would be to enhance perceptions of personal vulnerability, a key element of the health belief model. Furthermore, the placement of the Hotline number clearly served as a “cue to action.” Calling a telephone number does not require a great deal of skill, and it is the more complex behaviors for which notions of skill modeling and self-efficacy enhancement are important. Because the health belief model contains fewer and arguably simpler constructs than social cognitive theory, a storyline guided by the health belief model would consume less air time and require fewer constraints on character and plot development. These efficiencies could be salient to writers of shows in the United States who find the full Entertainment-Education approach too demanding or restrictive either initially or over time.

Another possible limitation of these results is that repeat callers cannot be distinguished in the call attempt data, so there probably were fewer individual callers than the tally indicates. Nonetheless, repeat callers were persistent in health information-seeking, and such persistence is important to encourage.

Unfortunately, during and immediately after the *B&B* episodes, the incoming call volume far exceeded the Hotline’s surge capacity. A few survey respondents that month said that they had heard about the Hotline from a soap opera. They were demographically similar to soap opera viewers, and most were making their first call to the Hotline. A substantial percentage of these callers reported either an intention to get an HIV test or to start using condoms, the key HIV risk reduction behaviors for sexually active women. Anecdotal evidence to support the contention that the *B&B* storyline encouraged preventive behavior was presented by the director of *B&B* when the CDC awarded the 2002 Sentinel for Health award to the show. At the ceremony, he described calls and letters stating that viewers had gotten HIV tests because of the storyline.

The Hotline is amending its protocols and technology to accommodate increased volume when it is known in advance that an AIDS storyline will be included in a national broadcast. In addition to improving service to callers, these changes will mean that future evaluation studies can do a better job of testing hypotheses about caller motivation.

A broader research agenda is necessary to answer outstanding questions about the Education-Entertainment approach in the United States (see www.cdc.gov/communication/eersrch.htm for the summary report of a relevant research agenda-setting conference). Theory-driven designs could compare the effect sizes of varying combinations of dramatic and informational elements. A cross-sectional study (Brodie et al., 2001) found that knowledge gains and increases in help-seeking behavior were associated with exposure to health information in a single episode of a prime-time medical drama, but knowledge gains were no longer detectable 2 months after the show. Longitudinal research with various audiences would help define the parameters of mass media presentations that (a) prompt the most prolonged attention to and deepest cognitive engagement with prevention issues, (b) bring about the most beneficial changes in the individual-level attitudes and be-

haviors that have been linked to health risks, (c) prompt the greatest decreases in the social stigma connected with disease, and (d) are least likely to result in viewer misconceptions and other unintended outcomes. Researchers should also attempt to provide direction for interactive face-to-face and electronic activities that can reinforce media messages.

In addition, because some of the television programming produced in the United States is broadcast around the world, it is important to understand how health messages in these programs affect international audiences (Blakley, 2001). *B&B* may be the most watched television show in the world, reaching an estimated 300,000,000 viewers in 110 countries daily (Tobin, 2002). The *B&B* HIV storyline emphasized HIV testing and expensive combination drug therapy, and we need to know what viewers in developing countries with limited healthcare resources took away from these broadcasts.

Continued collaboration with entertainment industry partners will be necessary to address these research questions. Such a partnership is important not only to leverage the extensive resources and audience access of the private entertainment industry, but also to benefit from its deep expertise in engaging and communicating with the public.

References

- Aiken, L. S., West, S. G., Woodward, C. K., & Reno, R. R. (1994). Health beliefs and compliance with mammography-screening recommendations in asymptomatic women. *Health Psychology, 13*, 122–129.
- Andrews, A. B., McLeese, D. G., & Curran, S. (1995). The impact of a media campaign on public action to help maltreated children in addictive families. *Child Abuse & Neglect, 19*, 921–932.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1994). *Social cognitive theory of mass communication*. In J. Bryant & D. Zillman (Eds.), *Media effects: Advances in theory and research* (pp. 61–90). Hillsdale, NJ: Erlbaum.
- Basil, M. D. (1996). Identification as a mediator of celebrity effects. *Journal of the Broadcasting Electronic Media, 40*, 478–495.
- Beck, V., Pollard, W., & Greenberg, B. (November 15, 2000). *Tune in for health: Working with television entertainment shows and partners to deliver health information for at-risk audiences*. Paper presented at the annual meeting of the American Public Health Association, Boston, MA. (Data available at www.cdc.gov/communication/healthsoap.htm).
- Becker, M. H. (1974). *The health belief model and personal health behavior*. Thorofare, NJ: Slack.
- Blakley, J. (2001). *Entertainment goes global: Mass culture in a transforming world* (Research Reports and Occasional Papers, No. 2). Los Angeles: University of Southern California, Norman Lear Center.
- Brinson, S. L., & Brown, M. H. (1997). The AIDS risk narrative in the 1994 CDC campaign. *Journal of Health Communication, 2*, 101–112.
- Brodie, M., Foehr, U., Rideout, V., Baer, N., Miller, C., Flournoy, R., & Altman, D. (2001). Communicating health information through the entertainment media. *Health Affairs, 20*, 192–199.
- Centers for Disease Control and Prevention (2003). *HIV/AIDS Surveillance Report: Cases of HIV Infection and AIDS in the United States, 2002, 14*.

- CDC (1992). Community awareness and use of HIV/AIDS-prevention services among minority populations—Connecticut, 1991. *Mortality and Morbidity Weekly Review*, 30(41), 825–829.
- Champion, V. L., & Miller, T. (1996). Predicting mammography utilization through model generation. *Psychology, Health & Medicine*, 1, 273–283.
- Dines, G., & Humez, J. (Eds.). (1995). *Gender, race, and class in media: A test reader*. Thousand Oaks, CA: Sage.
- Fan, D. P. (1993). Quantitative estimates for the effects of AIDS public education on HIV infections. *International Journal of Biomedical Computation*, 33, 157–177.
- Galavotti, C., Pappas-DeLuca, K. A., & Lansky, A. (2001). Modeling and reinforcement to combat HIV: The MARCH approach to behavior change. *American Journal of Public Health*, 91, 1602–1607.
- Graham, J. (June 13, 2001). Personal letter from the chief executive officer of the American Diabetes Association to Vicki Beck, director of CDC's Entertainment-Education activity.
- Graham, M. E. (2002). Health beliefs and self breast examination in black women. *Journal of Cultural Diversity*, 9(2): 49–54.
- Green, S. K., Lightfoot, M. A., Bandy, C. & Buchanan, D. R. (1985). A general model of the attribution process. *Basic and Applied Social Psychology*, 6, 159–179.
- Jason, L. A. (1998). Tobacco, drug, and HIV preventive media interventions. *American Journal of Community Psychology*, 26, 151–187.
- Jacobs, L. A. (2002). Health beliefs of first-degree relatives of individuals with colorectal cancer and participation in health maintenance visits: a population-based survey. *Cancer Nursing*, 25, 251–265.
- Kalichman, S. C. (1994). Magic Johnson and public attitudes toward AIDS: A review of empirical findings. *AIDS Education and Prevention*, 6, 542–557.
- Larson, M. S. (1991). Health-related messages embedded in prime-time television entertainment. *Health Communication*, 3, 175–184.
- McGuire, W. J. (1989). Theoretical foundations of campaigns. In R. E. Rice & C. K. Atkin (Eds.), *Public communication campaigns* (pp. 43–65). Thousand Oaks, CA: Sage.
- Myhre, S. L., & Flora, J. A. (2000). HIV/AIDS communication campaigns: progress and prospects. *Journal of Health Communication*, 5 (Supplement), 29–45.
- Nielson Media Research (2002). *The African-American audience: Weekly TV usage*. Retrieved November 26, 2003, from www.nielsenmedia.com/ethnicmeasure
- O'Brien, E. J., & Albrecht, J. E. (1992). Comprehension strategies in the development of a mental model. *Journal of Experimental Psychology: Learning, Memory & Cognition*, 4, 777–784.
- O'Leary, A. (2000). Women at risk for HIV from a primary partner: Balancing risk and intimacy. *Annual Review of Sex Research*, 11, 191–234.
- O'Leary, A., & Wingood, G. M. (2000). Interventions for sexually active, heterosexual women. In J. L. Peterson & R. J. DiClemente (Eds.), *Handbook of HIV Prevention* (pp. 179–100). New York: Kluwer/Plenum.
- Papa, M. J., Singhal, A., Law, S., Pant, S., Sood, S., Rogers, E. M., et al. (2000). Entertainment-education and social change: an analysis of parasocial interaction, social learning, collective efficacy, and paradoxical communication. *Journal of Communication*, 50, 31–55.
- Park, C. W., & Smith, D. C. (1989). Product-level choice: A top-down or bottom-up process? *Journal of Consumer Research*, 16, 289–299.
- Parrott, R. L. (1995). Motivation to attend to health messages. In E. Maibach & R. L. Parrott (Eds.), *Designing health messages: Approaches from communication theory and public health practice* (pp. 7–23). Thousand Oaks, CA: Sage.

- Pfau, M. (1990). A channel approach to television influence. *Journal of Broadcasting and Electronic Media*, 34, 195–214.
- Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change: Applications to addictive behaviors. *American Psychologist*, 47, 1102–1114.
- Rogers, E. M., Vaughn, P. W., Swalehe, R. M., Rao, N., Svenkernd, P., & Sood, S. (1999). Effects of an entertainment-education radio soap opera on family planning behavior in Tanzania. *Studies in Family Planning*, 30, 193–211.
- Singhal, A., & Rogers, E. (1999). *Entertainment-education: A communication strategy for social change*. Mahwah, NJ: Erlbaum.
- Siska, M., Jason, J., Murdoch, P., Yang, W. S., & Donovan, R. J. (1992). Recall of AIDS public service announcements and their impact on the ranking of AIDS as a national problem. *American Journal of Public Health*, 82, 1029–1032.
- Tobin, F. (2002). Report to Frank Tobin Public Relations from Bell-Phillip Television Productions, Los Angeles, CA.
- U.S. Census Bureau (2003). *Statistical Abstract of the United States*. Retrieved November 25, 2003, from www.census.gov
- Waugh, N. C., & Norman, D. A. (1965). Primary memory, *Psychological Review*, 72, 92–93.