

Applying Persuasion Strategies to Alter HIV-Relevant Thoughts and Behavior

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Health communication strategies are at the core of both mass media campaigns and public health interventions conducted at the community level concerning the prevention of HIV/AIDS. They are often nested in complex contexts that prevent us from being able to identify the persuasive impact of a specific message. The authors attempt to account for an array of factors contributing to the persuasiveness of messages about HIV. The aim is to synthesize the psychological literature on persuasion and thus provide a conceptual framework for understanding message effects in HIV communications. This discussion concerns fear appeals, message framing, tailoring, cultural targeting, and additional factors pertaining to the message, source, and channel of the communication. Whenever possible, recommendations for further research are formulated.

In view of the public health threat posed by the HIV epidemic, government agencies have invested considerable resources in mass media campaigns aimed at informing the public about this disease and its prevention. Numerous behavioral interventions have been implemented as well among vulnerable subgroups of the population with the purpose of shaping health behaviors relevant to HIV prevention. Both mass media and behavioral intervention strategies entail a communication component: Information is disclosed and transmitted by a source to potential receivers with the purpose of persuading and inducing behavior change.

In this article, we attempt to account for an array of factors contributing to this communi-

cation goal. Our aim is not to provide an evaluation of media campaigns devoted to HIV/AIDS; neither is it to conduct an exhaustive review of complete intervention programs. Rather, our approach consists of synthesizing the psychological literature on persuasion to provide a conceptual framework for understanding the particular effectiveness of certain kinds of messages in HIV communications. We also review evidence from the literature on health promotion—and, when available, HIV prevention—that supports these principles.

We first consider the use of threat appeals to motivate HIV-preventive behaviors. We provide an overview of theoretical considerations regarding the effectiveness of such appeals and then discuss studies investigating the impact of HIV communications based on threat. The second section addresses the role of message framing in the promotion of various health behaviors. Few investigators have studied systematically the impact of gain and loss frames on the persuasiveness of HIV-related messages. The findings obtained in this area reveal the complexity of HIV-relevant behaviors, notably with respect to the perceived risk or uncertainty associated with them. They also underscore the importance of matching the type of frame used to individuals' risk appraisals. In the third section, we report research designed to match messages to characteristics of the population or individuals targeted. The tailoring of information about cancer prevention offers a good il-

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lustration of what could be done in HIV communications. In HIV/AIDS prevention, matching so far has been limited mostly to cultural targeting. Finally, we discuss additional factors deserving greater attention in HIV-related messages. In all sections, we strive to identify the areas needing further research and to provide directions for this work. Overall, we intend to underscore the contributions of theory drawn from the persuasion literature to research on HIV-relevant communications.

Fear and Threat Appeals

When and How Are Threat Appeals Effective?

Threat appeals had been used in persuasive communication long before the fight against HIV and AIDS became the focus of important prevention efforts. The notion of threat appeals refers to messages stressing harmful (physical, social, psychological, or emotional) consequences if a recommendation is not followed. It is usually assumed that threat appeals induce fear; therefore, they are frequently referred to as fear appeals (however, this assumption has not often been tested; Petty & Wegener, 1998). Although threat is generally the antecedent of fear, this emotional reaction is not necessarily a systematic response to threat appeals.

Several hypotheses accounting for the role of fear in persuasion have been proposed (Hale & Dillard, 1995). According to the original hypothesis (Hovland, Janis, & Kelley, 1953), threat appeals produce fear or anxiety about the negative consequences depicted in the message. This emotional reaction prompts compliance with the recommendations if the advocated behaviors are perceived as effective to avoid these negative consequences. In these conditions, the more fear arousing the message, the more effective the appeal. A second hypothesis (Janis & Feshbach, 1953) involves the defensive avoidance or resistance triggered by messages that cause high levels of fear without providing ways of avoiding the negative outcomes depicted. Under these circumstances, the stronger the emotional reaction following threat appeals, the greater the resistance to persuasion. A third explanation for the role of fear in persuasion attempts to reconcile the previous two hypotheses (G. R. Miller, 1963). It posits a curvilinear

relationship between fear and persuasion: Failure to persuade is likely when levels of fear are too low or too high; only intermediate levels lead to persuasion. Two meta-analyses conducted on studies testing the impact of threat appeals showed that, overall, increases in fear were associated with increased persuasion, a conclusion consistent with the first hypothesis and at odds with the resistance and curvilinear hypotheses (Boster & Mongeau, 1984; Sutton, 1982). However, the changes associated with fear were observed with behavioral intentions and only to a much smaller extent with actual behaviors.

Other researchers have tried to define the conditions under which fear leads to persuasion. For instance, according to Leventhal (1971), threat appeals arouse the emotion of fear and the motivation to manage this fear. At the same time, threat appeals trigger the need to eliminate the potential danger evoked by the message. Thus, receivers may attempt to reduce the emotion of fear (fear control) or to avoid the negative consequences depicted in the message (danger control). Only the latter would lead receivers to follow the recommendation. Although this model raises an important distinction, it does not specify the conditions under which each motivation (fear control and danger control) would come into play.

Witte (1992) extended Leventhal's (1971) model by delineating these conditions. First, both processes need some level of threat to be activated (the message must engender substantial fear, and the danger must be perceived as such). In conditions of high fear, the extent to which danger control operates depends on the efficacy of the recommendation. If the message contains an effective method of avoiding the negative outcome, receivers will be motivated to comply with it. If the message does not spell out the means to avoid the undesirable consequences, receivers will be motivated to control their fear by engaging in emotion regulation.

The models reviewed thus far address the emotional component of persuasion following threat appeals. Protection motivation theory (Rogers, 1983), on the other hand, describes the cognitive components of effective threat appeals. According to this framework, threat appeals are effective to the extent that they convince receivers that (a) the consequences are very undesirable (severity of threat), (b) the

consequences represent a danger for them (vulnerability to the threat), (c) they can avoid the negative outcome by following the recommendation (response efficacy), and (d) they have the ability to engage in the recommended behavior (self-efficacy). According to protection motivation theory, the greater the extent to which a message contains these four components, the more effective it will be, irrespective of the level of fear elicited.

Several pitfalls must be avoided when one is using threat appeals (Petty & Wegener, 1998). On one hand, individuals often tend to minimize the likelihood that they will experience severe outcomes because of self-protective motives. On the other hand, if threat appeals are too strong, they may elicit an intense emotional reaction likely to reduce message processing. In some cases, this lack of careful examination of the message arguments may reduce persuasion.

Fear and Threat Appeals in HIV Prevention

Probably because of the deadly consequences of AIDS and the serious threat posed by the spread of HIV, the use of fear and threat appeals has been a widespread strategy to motivate HIV-preventive behaviors (Freimuth, Hammond, Edgar, & Monahan, 1990). Evocations of death and morbidity have been used commonly to frighten people in the hope of increasing feelings of vulnerability, concern, and willingness to protect oneself from these outcomes. For example, in a poster promoting abstinence distributed by the Connecticut Department of Public Health, the macro-picture of a cell is depicted, along with the slogan "AIDS eats your cells, eats your soul, eats your heart" printed on a red background. The New York State Department of Health also used a threat appeal in a black-and-white poster showing the feet of a corpse lying on a gurney, a tag with the word *AIDS* attached to the left big toe. The phrase "He didn't use a condom" is printed at the top of the poster. The purpose of these two billboards clearly was to arouse fear.

Laypeople often perceive such appeals as more effective in promoting HIV-preventive behaviors than emotionally neutral messages (Rhodes & Wolitski, 1990). Many designers of mass media campaigns as well work on the principle that to catch the attention of individ-

uals and initiate changes in health-threatening habits, one has to "shake" or shock them by using fear-inducing messages. But does arousing fear really improve the actual effectiveness of HIV prevention messages? To our knowledge, only a handful of studies have compared HIV-relevant messages according to their level of threat.

In two studies, LaTour and his colleagues examined the responses of samples of college students to two different advertisements (Johnson & LaTour, 1991; LaTour & Pitts, 1989). The first advertisement, sponsored by the Australian Ministry of Health, was known as the "grim reaper" advertisement, and it evoked the deadly consequences of AIDS along with a recommendation to use condoms (threat appeal). The second advertisement, sponsored by the United States Centers for Disease Control and Prevention, featured a male speaker calmly discussing the need for using condoms to prevent HIV infection (control condition). In comparison with the neutral message, the authors observed an increase in arousal (tension and energy) following the threat appeal. Participants reported greater liking and interest following the threat appeal, but they also judged this message more irritating and less appropriate than the control advertisement. Because behavioral intentions and behavior change were not measured, it is difficult to know the extent to which the threat-induced arousal actually was effective in motivating desired action.

Fear arousal does not necessarily lead to the adoption of health recommendations. In some cases, it can produce the reverse effect, as illustrated by a study in which a cohort of Australian gay men exposed to the "grim reaper" advertisement subsequently *reduced* safer sex behaviors (Rosser, 1991). Although the study design did not explore the mechanism by which this dramatic effect occurred, the authors concluded that images suggesting that no one can escape contracting AIDS and that death is inevitable for those who are HIV positive may have triggered denial and helplessness.

One can assume that most people fear AIDS at some level. Research among young adults and teens has shown high levels of fear of AIDS (Witte, 1992). However, this does not mean that people feel personally vulnerable. In fact, most people often downplay their own personal risk relative to their perception of others' risk (Sny-

der & Rouse, 1992). However, according to protection motivation theory, threat appeals need to create some level of personal vulnerability or susceptibility if they are to be effective (Rogers, 1983). In this regard, the role of AIDS campaigns should be to elicit some level of personal vulnerability instead of trying to increase levels of fear. Research is needed to determine how personal vulnerability can be increased and how this translates into compliance with recommendations. One way to achieve this might be to heighten the personal relevance of messages, for instance by cultural targeting or by presenting a source similar to the receivers (see later sections on targeting and source factors).

However, arousing one's personal vulnerability might be counterproductive if it is not accompanied by recommendations about how to avoid the threat depicted in the communication. In some cases, as personal vulnerability increases, receivers engage in denial strategies. For instance, one study showed that sexually active participants who watched a film carefully crafted to foster feelings of vulnerability perceived their risk of HIV infection as lower than their peers in a control condition (Morris & Swann, 1996). The film increased the perceived vulnerability of sexually active participants to the point that they denied their risk as a way to control fear. On the other hand, participants who were sexually inexperienced and whose initial level of personal vulnerability was globally low (because of the absence of past sexual risks) were receptive to the vulnerability manipulation: Their perception of personal risk of HIV infection increased relative to their counterparts in the control condition.

HIV prevention messages should provide receivers with actions that they perceive as feasible and effective. In that sense, interventions aimed at teaching people how to negotiate safer sex and how to use condoms are likely to increase self-efficacy in regard to such behaviors. However, many mass media campaigns relying on fear appeals do not contain components enhancing self-efficacy in the behaviors promoted (Kenny, 1990). For instance, the "America Responds to AIDS" campaign presented a heterosexual couple walking with a child and a voice and written message stating the slogan "AIDS—Protect yourself and your family—Get the facts." The message did not offer any con-

crete way to prevent the disease from destroying one's family. Other campaigns have proposed a solution that is not realistic or believable for everyone: sexual abstinence. Although condom use remains the best way for sexually active individuals to prevent the sexual transmission of HIV, Freimuth and her colleagues (1990), in their content analysis of AIDS public service announcements, found that only 18% of the advertisements reviewed specifically recommended condom use to prevent AIDS.

What is the empirical evidence that efficacy components added to HIV prevention messages increase their effectiveness? We could find only two instances in which this question was investigated. In an experimental setting, men took more condoms immediately after having watched a fear-arousing public service announcement about AIDS if the message contained the explicit recommendation to use condoms to prevent HIV transmission (Struckman-Johnson & Struckman-Johnson, 1996). However, the addition of the recommendation had no effect on intention to use condoms with sexual partners. Witte (1992) manipulated the efficacy component more systematically. In written messages presented to college students, she either described condoms as highly efficient in preventing HIV (high efficacy) or emphasized that condoms fail sometimes and highlighted the problems involved with their use (low efficacy). Witte also simultaneously manipulated levels of threat and vulnerability (low, medium, or high threat and vulnerability). She measured self-reported condom use 6 weeks later. The combination of high threat and vulnerability with high response efficacy resulted in an effective persuasive message that led to behavior change in the desired direction. However, threat appeals lacking ways to avoid the negative consequences depicted in the message produced a boomerang effect, in that participants were less likely to adopt the recommended behavior. Witte did not investigate the role of self-efficacy in persuasive HIV-relevant messages. Insisting on the participants' ability to engage in the behavior might have increased self-reported condom use.

Personality variables may also moderate the impact of fear messages. Indeed, people react differently to fear. Although Dinoff and Kowalski (1999) did not manipulate the level of threat posed by HIV-relevant messages, they distin-

guished people high and low in protection motivation on the basis of scales corresponding to the four components of protection motivation theory. People high in protection motivation were more likely than people low in such motivation to obtain condoms immediately after reading an HIV-related message. Thus, perceiving AIDS as a threat and feeling personally vulnerable to it, but at the same time acknowledging that there are ways to avoid HIV infection and feeling capable of engaging in preventive behaviors, led participants to engage in a prevention behavior. Moreover, fear appeals might be more effective with people who are realistic about evaluating risks than with people who tend not to see or to deny a given risk (Kenny, 1990). In this regard, the distinction between monitoring and blunting (S. M. Miller, 1987, 1995) is relevant. This distinction pertains to two dimensions characterizing styles of information seeking. When faced with a threat, high monitors characteristically seek information, whereas low monitors avoid it. High blunters typically try to distract themselves from the source of the threat, whereas low blunters generally avoid distraction and show a behavioral preference for threatening cues. Individual differences in these styles of coping with threat are likely to produce different patterns of reactions to threat appeals used in HIV communications.

Finally, threatening health messages may elicit other negative reactions along with fear. The risk in trying to induce fear in an attempt to persuade is that HIV prevention messages may engender other unintended affective responses such as anger or sadness. These various emotions may in turn initiate different action tendencies that may compete with or contribute to persuasion. For instance, it has been shown that participants experiencing a sad mood perceive themselves as less able to carry out health-promoting behaviors but as more vulnerable to diverse negative health outcomes (Salovey & Birnbaum, 1989). Threat appeals arousing sadness as well, especially those calling upon death or suffering, may be counterproductive in that this state leads to decreased self-efficacy in terms of the behavior promoted and, hence, a greater reluctance to adopt safer behaviors despite greater perceived vulnerability. Dillard and his colleagues observed that threatening public service announcements aimed at promoting HIV-preventive behaviors elicited mul-

tiplied emotions such as fear, surprise, sadness, and puzzlement (Dillard, Plotnick, Godbold, Freimuth, & Edgar, 1996). Fear and surprise were associated with increased perceptions of message persuasiveness; puzzlement seemed to play against message acceptance, whereas increases in sadness had no systematic effects.

Continued Need for Research on Threat Appeals and HIV Prevention

More research is needed on the role of emotions—in particular, fear—elicited by HIV prevention messages. Because amount of fear elicited is a key factor in determining the persuasiveness of messages, investigators should assess the emotional reactions induced by HIV prevention recommendations. They should also examine the extent to which HIV-preventive messages comply with the principles established by the persuasion theories discussed previously. Specifically, more attention should be devoted to the relative contribution of the four components distinguished by protection motivation theory (Rogers, 1983). The correspondence between levels of threat and behavior change should be documented, and the moderating role of self-efficacy in the behavior promoted should be assessed.

Finally, one largely ignored issue concerns the impact of threat appeals on feelings about sexuality (Paalman & Sandfort, 1990). Do they make people afraid of sex? If so, is it ethical to generate such fear? Is it possible to promote safer sex as something sensual? In short, how can we communicate that sex is, in itself, healthy, normal, and pleasurable and that HIV-preventive messages are not aimed at fighting or controlling sexuality as such but, rather, encouraging minimization of the risks involved?

Message Framing

Differential Influence of Positive or Negative Wording

A growing body of research documents that small changes in the wording of recommendations to motivate health behaviors may produce significant differences in their impact. In this work, the persuasiveness of messages stressing the *costs* of not performing the recommended behavior (loss frame) and messages emphasizing

ing the *benefits* of following the recommendation (gain frame) is compared (Rothman & Salovey, 1997). For instance, as a means of promoting safer sex, one could stress the costs of not using condoms through statements such as "If you don't use condoms you are at greater risk of sexually transmitted diseases" (attaining an undesirable outcome, a loss frame) or "If you don't use condoms you decrease your chance of staying healthy" (not attaining a desirable outcome, also a loss frame). A gain-framed message promoting safer sex emphasizes the benefits of using condoms: "If you use condoms you increase your chance of staying healthy" (attaining a desirable outcome) or "If you use condoms, you are at lesser risk of sexually transmitted diseases" (not attaining an undesirable outcome). As shown in this example, loss-framed messages can be phrased in two distinct ways: attaining an undesirable outcome or failing to attain a desirable outcome.

Similarly, gain-framed messages focus either on attaining a desirable outcome or not attaining an undesirable outcome (for similar distinctions, see Brendl, Higgins, & Lemm, 1995; Wilson, Purdon, & Wallston, 1988). Although the dimensions of action (attain vs. not attain) and outcome (desirable vs. undesirable) represent important conceptual distinctions (Rothman & Salovey, 1997), empirical work has not generally shown differences between the two ways of operationalizing loss or gain (Apanovitch, McCarthy, & Salovey, 2002; Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999). However, as reviewed subsequently, gain-framed and loss-framed messages do show systematic differences.

Messages can be framed in gain versus loss terms without affecting their substantive content. In the earlier example, the four messages are factually equivalent: "One should use condoms." That being said, which frame is more effective in motivating individuals to adopt healthy behaviors? Prospect theory enables us to specify the conditions under which each type of frame should be more effective (Kahneman & Tversky, 1984; Tversky & Kahneman, 1981). This theory proposes that people act to avoid risks when they consider gains or benefits and that they are more willing to accept risks when they consider costs as a way of avoiding the loss. Loss frames are more persuasive when individuals consider behavioral decisions that

they perceive as risky or uncertain, and gain frames are more effective in promoting these decisions when they are seen as involving little or no risk. For instance, it has been shown that when college students believed that people of their age were at risk of coronary heart disease, a loss-framed message increased their intentions to obtain a blood cholesterol test relative to a gain-framed message. When participants believed that only older people were at risk, the gain frame was more effective (Maheswaran & Meyers-Levy, 1990; Meyerowitz, Wilson, & Chaiken, 1991).

The extent to which one considers a specific behavior as more or less risky depends also on its goal: whether it is to prevent the onset of a health problem or detect its development (Rothman & Salovey, 1997). Preventive behaviors usually involve low risks, because they generally serve to maintain one's health and encompass little uncertainty (e.g., using sunscreen, eating healthy foods, or exercising). Consistent with prospect theory, the advantage of gain frames over loss frames has been shown in the effects of messages promoting sunscreen use on both intentions and actual behavioral outcomes (Detweiler et al., 1999; Rothman, Salovey, Antone, Keough, & Martin, 1993).

On the other hand, detection (screening) behaviors can inform individuals of a health problem. Because of the uncertainty of their outcome, these behaviors involve some risk (e.g., obtaining a mammogram involves the risk of a tumor being found). These immediate risks may overshadow the important long-term benefits of detection behaviors (i.e., obtaining treatment). Consistent with prospect theory, loss-framed messages should be more effective in promoting them than gain-framed messages. This prediction has been supported notably in the cases of mammography use (Banks et al., 1995; Schneider et al., 2001) and breast self-examination (Meyerowitz & Chaiken, 1987). Two experiments systematically compared the impact of message framing on the promotion of prevention or detection behaviors relevant to the same disease (Rothman, Martino, Bedell, Detweiler, & Salovey, 1999). Participants expressed greater intentions to engage in the preventive behaviors when the information was gain framed than when it was loss framed; loss-framed messages were more effective at encouraging the detection behaviors.

Messages that are framed in unexpected ways (Smith & Petty, 1996) or that do not match participants' experiences or concerns (Tykocinski, Higgins, & Chaiken, 1994) can be more effective in that they can lead to greater scrutiny or deeper message processing. For instance, Tykocinski et al. (1994) found that college students who were generally concerned about the presence of negative outcomes were more willing to comply with the advocacy when the benefits of eating breakfast were claimed than when the costs of not eating breakfast were stressed. Conversely, participants concerned about the presence of positive outcomes expressed greater intentions to eat breakfast after reading loss-framed information as opposed to gain-framed information. The authors suggested that when a framed message matches people's current concerns, they can effectively counterargue the message, thus undermining its impact, whereas messages mismatched to the general concern orientation are harder to counterargue and therefore more persuasive.

Finally, the personal relevance of an issue or one's involvement in it has an impact on framing effects. Several findings seem to support the idea that higher involvement with the target issue leads to greater framing effects. For instance, in one set of studies, only women were affected differentially by framed messages promoting skin cancer detection and prevention (Rothman et al., 1993). Men, for whom this disease is less of a concern, showed no differential sensitivity to framing (see also Meyerowitz et al., 1991).

Framing Effects in the Context of HIV

To what extent can we extrapolate from the findings of research on sunscreen use or mammography to make predictions about condom use and HIV testing? Very little research has examined message framing effects in the promotion of HIV-relevant behaviors. One could hypothesize that condom use, because it is a preventive behavior, would be better promoted by stressing its benefits. For instance, one might say "If you use condoms, you will stay healthy, you will feel peace of mind, or you will feel more relaxed and comfortable during sex." Similarly, because HIV testing is a detection behavior, loss frames could be expected to be more persuasive. In this case, one might say, "If you

don't get tested for HIV, you may feel more anxious because you may wonder if you're ill, or you would not access critical medical treatment that you would need if you were HIV positive." A pair of studies illustrates these two principles.

In one study, Linville, Fischer, and Fischhoff (1993) examined the impact of frames in terms of the success rate or failure rate of condoms on intentions to use them. Although condom use is the most effective way to prevent the sexual transmission of HIV if one is sexually active, condoms do not offer 100% protection, a fact very often stated in prevention information. How does priming the effectiveness rate of condoms versus their failure rate influence individuals' intentions to use condoms? When participants were told of the success rate of a particular condom brand, they reported more intentions to use them than when the failure rate was reported. These results support the notion that gain frames are more effective in advocating preventive behaviors such as condom use.

The other study aimed to promote HIV testing among a sample of African American women (Kalichman & Coley, 1995). A video presenting the potential costs and losses of not being tested was found to be more effective than messages omitting this information. Participants who watched this video expressed a greater intent to obtain testing and were more likely to be tested within 2 weeks after the intervention. Although this study illustrates the advantage of using a loss-frame message as compared with nonframed information, it did not test the superiority of loss frames over gain-framed messages in promoting HIV testing.

If HIV testing is thought of simply as a detection behavior, then loss-framed language should be more persuasive. On the other hand, HIV testing can be perceived as a more or less uncertain behavior depending on how one appraises one's own risk taking and exposure to HIV. In the case of some people, HIV testing involves a somewhat high level of uncertainty: They are aware of the fact that they have engaged in unsafe behaviors placing them at greater risk of HIV. Prospect theory predicts that messages stressing the costs of not obtaining testing will be more effective in bringing these individuals to accept the risk of finding that one has HIV. For some individuals, repeated HIV tests may have a prevention func-

tion to the extent that they confirm that adequate measures have been taken to avoid the virus. For other people, HIV testing does not comprise any risk at all because they perceive their previous behaviors as very safe. In the case of these two groups, one can predict that messages emphasizing the benefits of HIV testing will be more persuasive.

We conducted a community-based experiment to test this set of predictions (Apanovitch et al., 2002). A sample of inner-city women watched a video, framed either in gain or loss terms, encouraging participants to obtain HIV testing. Women who viewed HIV testing as a behavior with a certain outcome were more likely to have obtained testing within 6 months after the intervention if they had seen a gain-framed, rather than loss-framed, video. The opposite was true for participants who viewed HIV testing as a risky behavior with uncertain outcomes. These findings support the notion that individuals' risk appraisals moderate framing effects.

Moreover, in this study, we asked a subgroup of women what they considered the most important reason to obtain testing for HIV. We wanted to examine whether women who construed HIV testing as primarily serving prevention goals (i.e., preventing the spread of the virus to others) were more influenced by gain-framed messages than women who construed HIV testing as primarily serving the goal of early detection for the purpose of medical treatment. Six months after the intervention, women who viewed HIV testing as a detection behavior were more likely to obtain testing if they had viewed loss-framed messages. Among the women who viewed HIV testing as a prevention behavior, gain-framed messages were more effective. These results illustrate the importance of taking into account the meaning individuals assign to the specific behaviors advocated.

Future Directions for Research on Framing of HIV-Relevant Messages

The empirical evidence gathered to date indicates that the distinction between prevention and detection, although very useful, does not always capture or reflect individuals' appraisals of risk or uncertainty. The subjective perception of risk is often at odds with the objective benefits of the behavior advocated. For example,

important social, interpersonal, and personal risks are often associated with condom use (e.g., risk of raising suspicion, offending a partner, or making sex less enjoyable), which may undermine the long-term gains of using condoms. According to prospect theory, condom use would be better promoted by gain framing to the extent that people view this behavior as involving low risk. However, if social, interpersonal, and personal negative consequences of condom use are salient for message receivers, loss frames will be more effective in persuading them.

Because the meaning that individuals assign to the behaviors advocated is likely to vary notably in terms of risk appraisals, it would be enlightening to investigate subjective values and framing effects associated with behaviors other than condom use and HIV testing. For instance, public health practitioners may want to promote the acquisition of condoms or the negotiation of condom use in dyads. Condom acquisition might involve more or less risk in the eyes of individuals depending on whether they are concerned about embarrassment or negative evaluations from others (Devos-Comby & Salovey, 2001). Condom negotiation with sexual partners may involve interpersonal risk: the risk of losing face with an important other or losing a valued relationship (Afifi, 1999). The frames used to promote these specific behaviors would probably gain in persuasiveness if they were matched to individuals' perceptions of risks associated with the behaviors.

Another direction that deserves to be explored is the role of expectancies in regard to framing (Smith & Petty, 1996). Which frames about distinct HIV-relevant behaviors appear as more natural or more expected? What effect does frame congruency with expectancies have on persuasiveness of the messages? To what extent can we improve the distinct impact of each frame by manipulating the expectancies in the opposite direction? How does the general focus on negative or positive outcomes influence framing effects in the context of HIV? How does the personal relevance of the information presented influence the effectiveness of messages stressing the benefits or the costs of HIV-relevant behaviors? Finally, one could examine to what extent HIV-related information produces different affective reactions (such as

fear, sadness, or pride) that could moderate the persuasiveness of message framing.

Targeted and Tailored Health Communication

This section covers a recent trend in health communication: the tailoring and targeting of health messages. As noted by Kreuter and Skinner (2000), the terms *tailoring* and *targeting* are often used interchangeably. However, they refer to two different audience segmentation strategies for creating intervention materials or activities and developing health education programs (Slater, 1995). Tailoring can be defined as any combination of information or change strategies intended to reach one specific person and based on characteristics that are unique to that person (Kreuter, Farrell, Olevitch, & Brennan, 2000). These characteristics are thought to be related to the outcome of interest and are derived from individualized assessments. In other words, tailored information is aimed to a particular person and is built on individual-level factors related to the health or behavioral outcome at stake (Dijkstra & DeVries, 1999). Tailoring is achieved by collecting data from participants on psychosocial or behavioral factors and applying algorithms (usually computerized) to process each person's data and generate customized feedback to meet the individual's specific needs (for a review of existing computerized tailoring systems, see Bental, Cawsey, & Jones, 1999).

Targeting refers to the development of a single intervention approach or health communication for a defined population subgroup that takes into account characteristics shared by the subgroup's members. Typically, cultural variables based on demographic data (e.g., ethnicity, gender, age, location, or education) are used. Targeting of health communications and interventions follows from the idea that the population is not monolithic, and information may have different influences on different subgroups (Paalman & Sandfort, 1990). At the same time, there is an assumption that sufficient homogeneity exists among members of subpopulations to justify using the same communication with all members (Kreuter, Strecher, & Glassman, 1999). Some investigators prefer the term *cultural tailoring* to *targeting* when describing this strategy (Pasick, D'Onofrio, & Otero-Sabogal, 1996).

Targeting and tailoring can be conceived as part of the same continuum corresponding to the degree of match between a communication and individual characteristics (Kreuter, Farrell, et al., 2000). These two approaches nonetheless differ from each other on important aspects (Kreuter & Skinner, 2000): unit of assessment (subgroups vs. individuals), type of data collected (usually, demographic vs. psychosocial), and use of the data collected (use of individual-level data to characterize a subgroup vs. use of individual-level data to intervene at the individual's unique level). Studies suggest that targeting and tailoring are more effective than generic comparison programs that do not take into account the characteristics of the populations involved (Skinner, Campbell, Rimer, Curry, & Prochaska, 1999). The next section focuses on work investigating the benefits of tailoring. Most of this research has been applied to cancer prevention. We then present research relevant to HIV prevention. In the case of HIV/AIDS, efforts to match information to participants have focused on cultural targeting, rather than tailoring, almost exclusively.

Tailoring Information: Advances in Cancer Prevention

The literature on tailoring is characterized by the diversity of the interventions conducted (Rakowski, 1999; Skinner et al., 1999). Tailored interventions and health communications have been grounded in various models of health behavior. The choice of a model as the foundation of tailoring has direct implications for message content and format and for the mediating variables that are measured as psychosocial predictors of behavior change. Often, researchers have combined variables from distinct models for the tailoring of their interventions. For instance, components of tailored communications have been derived from the transtheoretical model (Prochaska, DiClemente, & Norcross, 1992). In such cases, researchers match the intervention strategy to the process of change associated with each of the five stages distinguished by the theory. Other tailored components have been based on the health belief model (Becker, 1974). This theory proposes that people are most likely to take preventive action when they perceive themselves at risk of a serious negative outcome and when they per-

ceive more reasons for than impediments to making the change. Thus, information is tailored to individuals' perceptions of risks, barriers, and benefits.

Also, the target of tailored interventions has varied, including smoking cessation (Strecher, 1999), nutrition (Brug, Steenhuis, Van Assema, Glanz, & DeVries, 1999; Campbell, Honess-Morreale, Farrell, Carbone, & Brasure, 1999), mammography (Skinner, Strecher, & Hospers, 1994), and physical activity (Bull, Kreuter, & Scharff, 1999). Moreover, programs have varied in terms of format (e.g., personal letters, brochures, or newsletters), delivery channel (e.g., mail, telephone, or videotape), message source (e.g., health providers, peers, or university researchers), number of variables on which tailoring is based and number of possible message combinations, amount of text and graphics addressing each variable, writing and language style, amount of tailoring, obvious versus implicit tailoring, and number of tailored components. Finally, intervention outcomes have been measured on various dimensions, including readability, reactions to materials, change in attitudes, behavioral intentions, behaviors, morbidity, and knowledge.

It is not easy to draw conclusions about the efficacy of tailored interventions because of all of the parameter variations that we have just described. Nonetheless, Skinner and her colleagues (1999) summed up what can be learned from this literature as follows. Tailored information is more likely to be read, remembered, and perceived as more relevant than comparison communications (Brinberg & Axelson, 1990; Brug, Glanz, Van Assema, Kok, & Van Breukelen, 1998; Skinner et al., 1994). Tailored information may have an impact on knowledge about and self-efficacy in the behavior promoted and may motivate participants to move to the next stage of change (Campbell et al., 1999). Tailoring also may enhance the ability of interventions to produce behavior change (Brug et al., 1998; Bull et al., 1999; Rimer et al., 1994; Skinner et al., 1994; Strecher et al., 1994).

Tailoring and Targeting HIV-Relevant Communications

To our knowledge, only one study has applied tailoring techniques to HIV communications (Brown-Peterside, Redding, Ren, & Kob-

lin, 2000). Using an interactive computer-based system, a sample of women responded to questions about their attitudes toward using condoms and their actual behavior. Immediately after completing this questionnaire, participants received tailored feedback based on their stage of change regarding condom use (i.e., readiness to use condoms). Almost half of the sample was at an early stage of change, considering using condoms but not actually using them consistently. The results of the study illustrated that, overall, attitudes were very positive toward the feedback and the system. They also suggested that traditional intervention strategies would be appropriate only for individuals ready to use condoms consistently, about one third of the sample. However, the impact of stage-matched feedback on HIV-relevant behaviors still remains to be demonstrated.

A study published almost a decade ago recommended that HIV-relevant communications be matched to behavioral and psychosocial factors such as actual and perceived risk (Snyder & Rouse, 1992). Four groups of individuals were distinguished. The "unthreatened" group included people who were not at risk for HIV and who perceived themselves as such. Therefore, they would not necessitate particular attention. "Panicked" individuals were not at risk but had misconceptions about HIV, leading them to overestimate their own vulnerability. Thus, these individuals should be presented with informational messages to correct misperceptions leading to inappropriate prevention strategies. Another group, the "deniers," significantly minimized the perception of their actual risks. Messages directed at deniers should contribute to increasing feelings of vulnerability to the HIV epidemic. Finally, "gamblers" were individuals who recognized their risks but felt inefficacious in preventing AIDS, mistrusted condoms or did not know how to initiate condom negotiation in the relationship. To reach them, messages should aim at increasing self-efficacy in preventing HIV infection.

More research has been dedicated to *targeting* HIV communication. HIV researchers mostly have embedded health information in culturally relevant contexts. In comparison with Anglos, ethnic minorities have been characterized by greater rates of misperceptions about AIDS and by increased risks for HIV transmission (Kalichman, Hunter, & Kelly, 1992). This

may result partly from a lack of cultural and personal relevance of AIDS prevention messages (Kalichman, Kelly, Hunter, Murphy, & Tyler, 1993; Michal-Johnson & Bowen, 1992). Cultural relevance, sensitivity, or targeting can be achieved by manipulating the surface or deep structure of messages (Resnicow, Soler, Braithwaite, Ahluwalia, & Butler, 2000). The surface structure refers to the match between information and observable social and behavioral characteristics of a target population. It implies using people, language, clothing, or music familiar to, as well as preferred by, the target audience. In contrast, deep structure targeting reflects how cultural, social, psychological, environmental, and historical factors influence health behaviors differently across ethnic groups. This involves understanding how members of the target population perceive the cause of illnesses and determinants of health behaviors.

These different levels of targeting have varied effects on behavior change. Kalichman and his colleagues (1993) targeted health communications by manipulating surface and deep structure cues. African American women were recruited in low-income housing projects and were randomly assigned to three conditions. In a control condition, they watched a videotape in which information was presented by the surgeon general and two White professional broadcasters. In the second condition, cultural sensitivity was manipulated at the surface structure level, by matching the ethnicity and sex of the presenters with participants' characteristics. In the third condition, cultural sensitivity was manipulated at the deep structure level. The videotape stressed culturally relevant values, such as cultural pride, community concern, and family responsibility. The presenters were the same as in the second condition but dressed more casually and spoke with less authority. The informational content was identical in all conditions.

In comparison with the two other conditions, deep structure targeting increased fear, anxiety, concern, and perceptions of the presenters as expressing more care and concern. No differences between targeting by the surface structure condition and the control condition were observed. All of the videotapes enhanced participants' HIV-related knowledge regardless of type. In summary, targeting the information by

social values increased the personal relevance of the information and produced stronger emotional reactions, but it did not make the message more persuasive. Moreover, because targeting involved the simultaneous manipulation of several contextual variables, it is difficult to identify the component of targeting to which the effects observed could be attributed. However, it appeared that simply using a source identical to participants in terms of ethnicity and sex did not produce differential effects relative to no targeting at all.

Similar results were obtained in a study conducted among a similar population (Kalichman & Coley, 1995). Women who reported just after watching the videotape that they intended to obtain HIV testing were more likely to actually get an HIV test when information was targeted at the deep structure. However, in this study, the most effective message differed from the other two in an additional aspect: Information was framed in loss terms, as described earlier. Therefore, it is difficult to disentangle the specific contributions of cultural targeting at the deep structure level and framing.

Herek and his colleagues (1998) also investigated the impact of cultural targeting. They compared a culturally specific message with a multicultural message. In a first condition, the videotape targeted a specific culture: Participants' ethnic identity and community identification were made salient by manipulating the communicator's race and clothing and the message content. In two other conditions, the message was targeted at multiracial audiences by discussing the problems posed by AIDS for different ethnic groups, and it was delivered either by an African American communicator or a White man. Ratings of the message were consistently more favorable for the African American announcer delivering a culturally specific message, whereas the multicultural message delivered by the White communicator was the least favorable. To some extent, the multicultural message was better perceived if an African American rather than a White man delivered it. Although the videotapes increased participants' worries and perceptions of their own risks, the type of message did not affect these variables. Intentions to reduce risks or to obtain HIV testing were not influenced by the videotapes.

Developing Research on Targeting and Tailoring of HIV Communications

Several researchers have argued the case for cultural sensitivity in HIV education (Markova & Power, 1992; McDaniel, Isenberg, Morris, & Swift, 1997; Michal-Johnson & Bowen, 1992). The studies on HIV communications reviewed here illustrate that cultural targeting, especially when grounded in deep structure, increases the relevance of the message and produces emotional reactions to it. However, this alone does not seem to motivate more distal outcomes such as behavior change or intentions to engage in safer behaviors. Moreover, the specific techniques of targeting have not been investigated systematically, and multiple variables are often studied at the same time, preventing us from clearly understanding the contributions of each factor.

Furthermore, the benefits of tailoring messages to current HIV-relevant behaviors should be examined. Actual risks and perceived risks appear to be key variables in this respect (Snyder & Rouse, 1992). For instance, one study indicated that a significant minority of college students thinks in terms of pregnancy risk, rather than risks of contracting sexually transmitted diseases, when considering safer sex (Witte, 1992). For these individuals, being on birth control is reason enough not to use condoms. Obviously, messages promoting condom use would be more persuasive if they were tailored to these representations.

Other variables for tailoring could be derived from theoretical models of behavior change. For instance, Maibach and Cotton (1995) discussed how the transtheoretical model (Prochaska et al., 1992) could provide a framework to tailor HIV-relevant messages. They gave instances of specific messages aimed at each stage. Individuals in *precontemplation* lack intentions to modify their risk behavior and are more likely to respond positively to messages that encourage self-examination rather than behavior change. Messages aimed at them should acknowledge the risks associated with multiple partners and unprotected sex and endorse several positive outcomes of monogamy and condom use. People in *contemplation* are aware of the need to practice a healthier behavior but are not ready yet to take action. To reach individuals at this stage, messages should address the

barriers to safer sex or use of clean needles. People who are preparing for *action* often have some experience with the new behavior and are attempting to modify their behavior, experiences, and environment in an effort to practice the new behavior consistently. In this case, messages should reinforce appropriate behaviors. Finally, to promote *maintenance* of healthy behaviors, messages should refine skills that will help people avoid relapse.

Also, research efforts should investigate further the mechanisms that need to be acted on to enhance both targeted and tailored message effects (Abrams, Mills, & Bulger, 1999) and determine the conditions under which these techniques produce the most benefits (Holt, Clark, Kreuter, & Scharff, 2000). Skinner and her colleagues (1999) described the need for laboratory-based research and smaller scale studies, in that they would permit greater manipulation of variables and tailored components before the launching of larger, community-based interventions. This advice certainly applies to research on targeting as well. Also, there is still a need for investigation of the relative advantages of tailoring versus targeting. In some cases, information well matched to participants (by targeting or simply by chance) may be as effective as the more complex tailoring (Kreuter, Oswald, Bull, & Clark, 2000).

Finally, research should assess the cost-effectiveness of tailored interventions as compared with generic and targeted interventions. Although tailoring is greatly facilitated by electronic technologies, tailored interventions, because they are often more intense and more complex, may be more costly. On the other hand, tailored interventions might be more cost-effective because they successfully reach different segments of the population. The trade-offs among complexity, demand burden on participants, reach, efficacy, and cost-effectiveness need to be evaluated (Abrams et al., 1999; Kreuter et al., 1999).

Other Message, Source, and Channel Factors

In our concluding remarks, we would like to extend the scope of our discussion to include additional factors whose role in HIV communications needs to be further investigated. These communication parameters pertain to the *mes-*

sage, its source, and the *channel* (message format) by which information is transmitted.

Message Factors

The discrepancy between an advocated behavior and the receiver's actual behavior affects motivation to comply with the advocacy (Petty & Wegener, 1998). The greater the discrepancy, the more difficult it is to induce behavior change. For this reason, a message promoting abstinence would be less likely to generate compliance among a population of sexually active individuals than a message advocating condom use. For this population, abstinence implies a more radical change than condom use, which builds on an existing behavior (sexual activity). This point is illustrated in an HIV-education study conducted among gay men in New Zealand (Robert & Rosser, 1990). The interventions compared had differential effects on specific safer sex behaviors such as condom use, monogamy, and avoidance of anal intercourse.

The explicitness of the recommendation also deserves investigation. Ratzan and his colleagues (Ratzan, Payne, & Massett, 1994) reviewed public service announcements used in the "America Responds to AIDS" campaign and underscored the lack of clear messages regarding safer sex and high-risk behaviors (such as drug use and same-gender sex). Although in the case of sexual behaviors, the tendency might be to adopt more implicit language so as to avoid being offensive, evidence suggests that explicit recommendations are needed to motivate people to adopt prevention behaviors. Indeed, it has been shown that participants were more likely to acquire condoms immediately after a public service announcement when the message contained the explicit recommendation to use condoms to prevent HIV transmission than when it did not (Struckman-Johnson & Struckman-Johnson, 1996). However, there might be instances in which the use of very explicit messages becomes counterproductive if these communications arouse emotions such as embarrassment toward the advocated behaviors.

Finally, research is needed examining the impact of "mixed messages" as compared with unilateral messages. Mixed messages can be defined as communications advocating two apparently mutually exclusive behaviors, for instance, abstinence and condom use (McGrath &

Strasburger, 1995). How do teenagers and young adults receive these mixed messages, and how do these communications affect their actual behaviors? Also, what is the best way to promote use of condoms, given the knowledge that they do not always provide 100% protection? Obviously, it is better to emphasize the success rate of condom use rather than the failure rate (Linville et al., 1993). However, what is the effect of stating or not stating the success rate of condoms? Research is lacking on these issues.

Source Factors

Is a message on HIV/AIDS persuasive to the same extent whether it comes from the surgeon general, a peer, or a celebrity? Research on source variables in other areas has shown their impact on persuasion. Source variables can be defined as aspects of the person(s) or group(s) presenting the persuasive appeal (Petty & Wegener, 1998). Such factors pertain to source expertise, popularity, or similarity to recipients. HIV communications have used experts or peers to present information, based on the assumption that expertise or similarity will increase persuasiveness. Source-receiver similarity has also been used as a way to achieve cultural targeting and increase personal relevance. The psychological literature indicates that source effects will occur in conditions of low message scrutiny, that is, when people are less motivated or able to process the message content carefully (Petty & Wegener, 1998).

Researchers have examined the effect of celebrities disclosing their HIV-positive status and endorsing health-relevant messages. Interest in AIDS information, concern about the disease, and discussions of the disease among friends increased after basketball star Magic Johnson disclosed his seropositivity (Kalichman & Hunter, 1992), as did HIV counseling-testing requests (Tesoriero, Sorin, Burrows, & LaChance-McCullough, 1995). Brown and Basil (1995) examined the mechanisms underlying celebrity effects on attitudes and behaviors. They distinguished between the simple fact of knowing the celebrity's HIV-positive status and emotional involvement with the star. Mere knowledge of Magic Johnson's HIV status was not enough to account for increased concern or intentions to reduce risk taking. Rather, emo-

tional involvement with the celebrity was the key factor. It was significantly related to personal concern about AIDS and intentions to reduce high-risk sexual behaviors. Therefore, the mechanism underlying celebrity effects on persuasion may be identification: Audience members who identify with celebrities seek to be like them by adopting similar attitudes, beliefs, and behaviors.

Systematic comparisons between sources varying in terms of expertise, similarity to receivers, popularity, or likeableness would help determine the aspects of the communicators that are most influential. These effects should also be considered in relation to the populations studied: Which audiences are more sensitive to involvement with or similarity to the source? Who is more convinced by expertise? In which circumstances are source effects the strongest? Finally, use of personal stories of HIV-positive individuals chosen because of their similarity to receivers may entail the following pitfall: Such communications may increase feelings of personal vulnerability to the point that individuals may engage in fear-control processes (e.g., denying their own risks for HIV) rather than in danger-control processes (e.g., adopting safer sex; see Morris & Swann, 1996).

Channel Factors

HIV information has been communicated through all possible means: print materials, videotapes, mass media, and the Internet, to name a few (see Perloff, 2001). We cannot address cost-effectiveness considerations about different channels used to communicate HIV-related information, although this is an important factor in deciding which type of communication to favor. Rather, we aim to underscore a conceptual distinction that offers an interesting framework for understanding the role of message channel in persuasion (Petty & Wegener, 1998): self-paced and externally paced presentation of messages. A typical self-paced message is a printed communication enabling the reader to go back and read and reread anything if desired. Externally paced communications, such as public service announcements, do not allow receivers to control the pace of information delivery. Self-paced communications lead to greater message scrutiny, whereas externally paced messages, because they provide visual prompts, in-

crease the impact of peripheral persuasion cues such as communicator credibility and likeableness. Finally, the message channel in itself could influence the mode of information processing. Indeed, certain types of presentations may impress some people (who thus pay more attention to the message or give more credit to the content) but distract others (who thus do not scrutinize the content of the communication). Persuasion research is characterized by a dearth of systematic analyses of channel effects. Because HIV communications have historically used multiple channels to reach populations, they certainly offer an arena to investigate such determinants more rigorously.

A Plea for Theory-Driven HIV Prevention Programs

In this article, we have reviewed literature bearing on variables at the message and individual levels. Our approach has consisted of analyzing what can be done at a micro-level to motivate individuals to engage in HIV prevention behaviors. Our intention was not to undermine the importance of contextual factors. Efforts to promote healthy practices should be aimed at a structural level as well. In fact, both levels should be targeted simultaneously to lead to effective prevention. As an example, it is useless to motivate people to use condoms if condoms are not made easily available in stores, clinics, prisons, schools, and so forth. On the other hand, easy access to condoms does not guarantee that people will use them; they have to be convinced of their necessity. This article has presented an overview of different techniques to reach people at this latter level of analysis.

Our goal was to provide conceptual frameworks that could be used to design effective HIV communications and to stress the benefits of using theory-driven approaches. "Without research, prevention policies will only succeed by accident" (Paalman & Sandfort, 1990, p. 208). To influence behavior, one needs to rely on scientific knowledge about persuasion strategies, the nature of the behaviors targeted, and receivers' psychosocial and cultural characteristics. We hope that this article will convince policymakers, mass media campaign designers, researchers, and other readers interested in HIV communications of the necessity of bor-

rowing frameworks from the broader literature on persuasion.

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