AIDS is first and foremost a communication and persuasion challenge. There is no cure for AIDS at this time; there is only prevention. The answer lies in the development of persuasive interventions for use via both mass media and interpersonal communication channels.

— Reardon (1989, pp. 274, 289)

The role of mass media is often overemphasized and inappropriately suggested as a solution to serious public health issues. The mass media fantasy is, in brief, that almost any given social or health problem can be adequately addressed if the right message could be communicated to the right people in just the right way at the right time.


As these quotations illustrate, social scientists have offered both optimistic and pessimistic assessments of the utility of persuasion-based interventions for addressing the current AIDS crisis. To what extent can persuasion-based interventions via the mass media and other channels be effective in stopping the spread of AIDS? Our own view is that appropriately designed persuasive communications and interventions can be effective. Our goal in this chapter is to highlight the dominant social psychological approaches to attitude and behavior change in an attempt to summarize basic theory and research on persuasion that is of potential relevance to AIDS prevention. An appreciation of current thinking regarding the basic mechanisms by which persuasion is achieved should enhance the likelihood of selecting appropriate intervention strategies for preventing the spread of AIDS. Furthermore, an understanding of the psychological processes underlying social influence may help guard against either overly optimistic or pessimistic
assessments of the prospects for changing attitudes and behaviors relevant to HIV infection.

CONTEMPORARY APPROACHES TO PERSUASION

Social scientists concerned with the study of human influence have focused on the concept of "attitudes," or peoples' general predispositions to evaluate other people, objects, and issues favorably or unfavorably. In addition to attitudes toward the AIDS disease itself (which are presumably negative for nearly all people), other attitudes relevant to the current AIDS crisis include attitudes toward: (a) oneself (e.g., low self-esteem or perceptions of personal invulnerability may encourage unsafe sexual practices), (b) authority figures (e.g., parents, government officials, and teachers who advocate safe sex), (c) peers (e.g., friends who may stigmatize those who use condoms), and (d) various AIDS-related behaviors (e.g., condom use, IV drug use). The attitude construct has achieved its preeminent position in research on influence because of the assumption that a person's attitude was an important mediating variable between the acquisition of new knowledge on the one hand, and behavioral change on the other. For example, initial AIDS educational programs were based on the view that providing the "facts" about AIDS would lead to positive attitudes toward safe sex and avoidance of risky behaviors (Becker & Joseph, 1988). In fact, assessments of AIDS prevention efforts sometimes focus on the new knowledge acquired rather than on attitude and behavior change per se (e.g., Gantz & Greenberg, 1990). Unfortunately, current research suggests that general knowledge about AIDS often has little impact on a person's own attitudes and behavior (e.g., see Fisher & Fisher, 1992; Stall, Coates, & Hoff, 1988). For example, a survey of 1,150 high school seniors included in Who's Who Among American High School Students in 1991 revealed that nearly all knew how AIDS was contracted, but 42% of those who were sexually active indicated that they would have sexual intercourse even if a condom was not available ("AIDS hasn't spurred teen condom use," 1992).

Over the past 50 years, numerous theories of attitude change and models of knowledge–attitude–behavior relationships have developed (see reviews by Olson & Zanna, in press; Petty, Ummova, & Strathman, 1991; Tesser & Shaffer, 1990). We review two broad approaches to persuasion and discuss their relevance to AIDS prevention in the remainder of this chapter.

Communication/Persuasion Matrix

One of the earliest assumptions of theories of attitude change (e.g., Strong, 1925), that is also evident in contemporary approaches (e.g., McGuire, 1985), was that effective influence required a sequence of steps (Petty & Cacioppo, 1984). For example, Fig. 6.1 presents McGuire's (1985, 1989) Communicatio-
AIDS, of media public service announcements and educational programs has been initi-
ated with the goal of stopping the spread of AIDS. During the period from 1985
to 1989, an average of more than 7,000 stories on AIDS appeared in the media
each year. It is therefore likely that a wealth of facts and information have been
made available to the general public about HIV infection and AIDS. In-
terestingly, the massive dose of AIDS messages in the media has not had much
impact on people's personal perceptions of vulnerability to HIV infection, but it
has been accompanied by an increased perception that an AIDS epidemic is more
likely (i.e., that others are more susceptible; Singer, Rogers, & Glassman, 1991).
Exposure to information does not guarantee attention to its contents, however.
Just because a person receives a pamphlet in the mail or is sitting in front of the
television doesn't mean that he or she knows what specific information is pre-

sent. Even if the person does notice the information, this does not mean that
the person's interest will be engaged. For example, in one study, only 40% of
men surveyed in Los Angeles who claimed to have received the Understanding
AIDS brochure reported reading it (Montgomery, Freeman, & Lewis, 1989).
What determines whether an individual will show any interest in AIDS-relevant
messages? People will generally attend to information that they perceive relevant
to their lives and lifestyles. Thus, some have argued that messages advocating
safe sex and condom use should be eroticized because high-risk individuals are
those who enjoy sex often. For these individuals, the eroticized messages would
presumably "get their attention and hold it, and strengthen cognitive-affective
associations between hot sex and safe sex" (Catania et al., 1989, p. 253; see also
Solomon & DeJong, 1986). On the other hand, people may avoid AIDS-related
messages if they find them threatening. Thus, people who are uncomfortable
with sex or their own sexuality may avoid such messages. For example, Fisher
and Misovich (1990) found that acceptance of being gay was associated with
seeking exposure to media AIDS messages and denial of being gay was associ-
ated with avoiding information about AIDS. One challenge in preparing AIDS-
relevant messages is constructing them so that they are maximally appealing and
relevant to the intended audience.

The next two output stages in the Communication/Persuasion matrix involve
comprehension and acquisition, or what part of the information presented the
person actually understands and learns. That is, people who are attending to and
interested in the message may learn something from it, or they may not. Further-
more, just because people learn some new information does not mean that they
will yield to or agree with it, the next step in the influence sequence. There are,
of course, many determinants of whether or not a person will accept a message,
and as we describe shortly, several processes that can produce yielding (e.g.,
identifying with an attractive source; thinking about the favorable implications
of the arguments presented). The next step in the influence sequence involves
memory or storage of the new information acquired and the attitude that it
supports. The next three outputs detail the processes involved in translating the
new attitude into a behavioral response. That is, at some subsequent behavioral opportunity, the person must retrieve the new attitude from memory (and perhaps the information that supports it), decide to act on it, and perform the appropriate action. Finally, the model notes that if the new attitude-consistent behavior is not reinforced, the new attitude and the behavior it supports can be undermined. If the behavior is rewarding, however, performance of the behavior may lead to attitudinal consolidation, making the link between the new attitude and behavior more likely to persist over time.

Variants of this general information-processing model were often interpreted in theory and in practice as suggesting that a change early in the sequence (e.g., attention) would inevitably lead to a change later in the sequence (e.g., yielding). McGuire (1989) noted, however, that the likelihood that a message will evoke each of the steps in the sequence should be viewed as a conditional probability. Thus, even if the likelihood of achieving each of the first six steps in a mass media campaign was 60%, the maximum probability of achieving all six steps (exposure, attention, interest, comprehension, learning, and yielding), would be .6^6 or only 5%. According to the Communication/Persuasion Matrix model then, once some researchers determined that there were no discernable changes in public knowledge as a result of the Understanding AIDS brochure (Singer et al., 1991), it would not be surprising that others would conclude that no behavior changes resulted either (Snyder, 1991) because the model holds that the initial steps are necessary for the later ones. Even if some initial knowledge change was produced, however, no behavior change would be expected if one of the intervening steps between knowledge acquisition and behavioral action did not occur.

Another important feature of the Communication/Persuasion Matrix model of influence is the fact that any one input variable may have different effects on the different output steps. In a cogent analysis of this point, McGuire (1968) noted that several variables might have opposite effects on the steps involving reception of information (e.g., exposure, attention, comprehension, acquisition, memory) versus acceptance of or yielding to the information. For example, recipient intelligence is related positively to reception processes, but is negatively related to yielding. The joint action of reception and yielding processes implies that people of moderate intelligence should in general be easier to influence than people of low or high intelligence (see also, Rhodes & Wood, 1992).

Additional Issues for the Communication/Persuasion Matrix Model

Although McGuire's input/output matrix model serves as a useful way to think about the steps involved in producing attitude and behavior change via the mass media or other means, it is important to appreciate a number of complicating factors. First, the accumulated persuasion literature strongly suggests that some of the steps in the postulated information-processing sequence may be independent of each other, rather than sequential. For example, although a person's ability to learn and recall new information (e.g., facts about the transmission of AIDS) was often thought to be an important causal determinant of and prerequisite to attitude and behavior change (e.g., favoring and engaging in safe sex), this is not always true (Greenwald, 1968; McGuire, 1985; Petty & Cacioppo, 1981). Rather, the existing evidence shows that: (a) message comprehension and learning can occur in the absence of attitude change, and (b) a person's beliefs and attitudes may change without the person learning the specific information in the communication.

Second, the Communication/Persuasion Matrix model tells us little about the processes responsible for yielding to a message. Even though the initial steps in the information-processing sequence were viewed as prerequisites to acceptance, McGuire did not mean to imply that people would invariably yield to all information they comprehended and learned. That is, the earlier steps were thought to be necessary but not sufficient for yielding. According to the model, just as source and other input variables determine the extent of attention to the message, they also determine the extent of message acceptance. The model does not focus, however, on how or why the various input variables have an impact on yielding or the other output variables. In contrast, current psychological research on influence has focused more on this issue (e.g., how does the credibility of the source affect yielding or resistance to a message?).

Cognitive Response Theory

Cognitive response approaches to persuasion (Greenwald, 1968; McGuire, 1964; Petty, Ostrom, & Brock, 1981) were developed explicitly to address two issues unaddressed by the Communication/Persuasion Matrix. That is, cognitive response analysis attempted to do two things. First, it aimed to account for the low correlation between message learning (e.g., as assessed by recall of facts about AIDS transmission) and attitudes and behaviors (e.g., as assessed by acceptance of and use of condoms) observed in many studies. Second, it sought to explain the specific process responsible for yielding. Cognitive response theory holds that the extent of yielding is related to the idiosyncratic thoughts (pro- and counterarguments) generated in response to the message rather than to learning of the message per se. Furthermore, the persistence of persuasion is related to memory for the cognitive responses elicited by the message rather than to memory for the specific message content. Although the cognitive response approach provides some important insights into the persuasion process, it overemphasizes the extent to which people are active processors of the information given to them. Thus, the theory does not account very well for persuasion in situations where people are not actively thinking about the message content (e.g., Petty, Cacioppo, & Goldman, 1981).
Figure 6.2 illustrates many of these points by diagramming the reactions of six hypothetical people to a television public service announcement (PSA) about AIDS. The sponsors of this PSA want young people to learn that engaging in sex without condoms is very risky and can lead to HIV infection. The spot features a popular celebrity spokesperson who serves as the source of the communication. As depicted in the figure, Person A gets nothing from the message (and will not be considered further). Persons B, C, D, and E all understand the gist of the message and would pass a typical recall or comprehension test on the specifics of the communication.

As noted earlier, current models of persuasion suggest that it is unlikely that one can judge the effectiveness of the ad solely by examining the knowledge acquired from the communication. Rather, an individual’s idiosyncratic cognitive responses to the message are critical. Person B actively counterargues the message thinking that the message only applies to certain kinds of people—gays and IV drug users. Person C understands the message but thinks it does not apply because he is young and healthy. Thus, both B and C have learned the message, but dismiss it as irrelevant to them, although for different reasons. Persons D and E have the initial response desired by the campaign sponsors in that both come to think that sex without condoms could be dangerous for them. However, Individual D values risk and danger (e.g., is a high sensation seeker; Donohew, Lorch, & Palmgreen, 1991; Zuckerman, 1974), and thinks that unsafe sex might therefore be exciting. Person E, who shows the expected response of disliking danger, comes to dislike unsafe sex.

One of the puzzling findings in AIDS research has been the inconsistent relationship between perceptions of personal risk and engagement in unsafe sexual practices. In some studies of gay men, increased perceptions of risk were related to decreased engagement in unsafe sexual practices as expected (e.g., Klein et al., 1987), but in other studies the opposite was observed (Joseph et al., 1987). Thus, it is important to consider how different individuals react to perceptions of risk. For example, in one study of gay and bisexual men it was found that for those men who were HIV negative and had a primary sex partner, increased perceptions of risk were associated with increased safe sex practices, but among those who were HIV positive and had no primary sex partner, increased risk perception was associated with less safe sex practices (Aspinwall, Kemeny, Taylor, Schneider, & Dudley, 1991). The important point is that one needs to know more than whether or not a person has acquired new information. We also need to know how the person reacts to that information. In Fig. 6.2, only one (Person E) of the four people (B, C, D, E) who processed the message and would pass a typical knowledge test showed attitude change in the desired direction (see Fishbein & Middlestadt, 1989, for further discussion of the role of idiosyncratic beliefs in influencing attitudes about AIDS).

Finally, Fig. 6.2 presents Person F who misses the central point about the potential danger of unsafe sex entirely (and thus would fail the comprehension test), but does learn something—that the featured celebrity approves of condoms. Because Person F likes the celebrity, F also comes to believe that condoms are good without engaging in any thought about the content of the message itself. This result is expected by balance theory, which states that people feel more comfortable when they agree with people they like, and disagree with people they dislike (Heider, 1958). Note that Persons E and F have formed the same attitude, but as we explain later in the chapter, some attitudes have greater implications for behavior than others. That is, E’s new attitude will tend to be more directive of subsequent behavior than F’s.

In summary, Fig. 6.2 demonstrates that: (a) attitude change can occur in the absence of the presumably critical knowledge (Person F); (b) the critical knowledge can be acquired without producing any attitude change (Person B and C), (c) the same knowledge can lead to opposite attitudes (Persons D and E), and (d) attitudes that are ostensibly the same can be produced by very different processes and have different implications for behavior (Persons E and F). This analysis may help to explain why AIDS and other health intervention campaigns have sometimes found that message learning and changes in knowledge occur in the absence of attitude change and vice-versa (e.g., Gray & Saracino, 1989; Sherr, 1987).
The Elaboration Likelihood Model of Persuasion

The Elaboration Likelihood Model (ELM) of persuasion (Petty & Cacioppo, 1981, 1986) is a theory about the processes responsible for yielding to a persuasive communication that accommodates the points made by Fig. 6.2. At the most basic level, the model holds that the processes that occur during the yielding stage can be thought of as emphasizing one of two relatively distinct "routes" to persuasion.

Central Route

One route to persuasion, the central route, involves effortful cognitive activity whereby the person draws on prior experience and knowledge to carefully scrutinize and evaluate the issue-relevant arguments presented in the communication (whether the message appears in the mass media or comes from a friend, parent, or teacher). Consistent with the cognitive response approach outlined earlier, the message recipient under the central route is actively generating favorable and/or unfavorable thoughts in response to the message. In order for this to occur, the person must possess sufficient motivation and ability to think about the merits of the information provided. The end result of this careful and systematic processing is an attitude that is well articulated and integrated into the person's belief structure. Attitudes changed by this route have been found to be relatively accessible, persistent over time, and predictive of behavior (see Chaiken, Liberman, & Eagly, 1989; Petty & Cacioppo, 1986).

In addition, the more a person initially thinks about and has practice in defending a newly acquired attitude, the more likely the person is to resist the subsequent challenges the new attitude surely will face. That is, attitudes changed via the central route tend to be relatively resistant to counter messages (e.g., Haugtvedt & Petty, 1992). In his inoculation theory, McGuire (1964) used a biological analogy to suggest that just as people can be made more resistant to a disease by giving them a mild form of the germ, people can be made more resistant to attacks on their attitudes by inoculating their new opinions. The inoculation treatment consists of exposing people to a few pieces of attacking information and showing them how to refute it. Research clearly indicates that people whose attitudes are bolstered with inoculation treatments become less vulnerable to subsequent attacks on their attitudes than people whose attitudes are bolstered with supportive information alone (see McGuire, 1964). Thus, instead of providing only favorable information about the use of condoms, a message taking advantage of inoculation techniques might also contain unfavorable information along with counterarguments (e.g., yes, condoms may reduce pleasure slightly for some, but is this more important than saving your life?).

Peripheral Route

In stark contrast to the central route approach, some theories of persuasion do not place much credence on the arguments in a message or issue-relevant thinking. Instead, they postulate a peripheral route whereby simple cues in the persuasion context either elicit an affective state (e.g., happiness) that becomes associated with the advocated position (as in classical conditioning; Staats & Staats, 1958), or trigger a relatively simple inference or heuristic that a person can use to judge the validity of the message (e.g., "experts are correct;" Chaiken, 1987). Public service announcements attempt to employ this strategy when they rely on the audience accepting a conclusion simply because it is associated with a well-liked celebrity or sports figure rather than because the audience focuses on the merits of the arguments that are presented. We do not mean to suggest that peripheral approaches are necessarily ineffective in changing attitudes. In fact they can be quite powerful in the short term. The problem is that people's feelings about celebrities and sports figures can change dramatically over time (e.g., today's teen idol is tomorrow's fallen star), and the positive sources may become dissociated from their messages (Pratkanis, Greenwald, Leippe, & Baumgardner, 1988).

Laboratory research has shown that an attitude change based on peripheral cues tends to be less accessible, persistent, resistant, and directive of behavior than the same amount of attitude change based on careful thinking about the merits of the position presented (Petty & Cacioppo, 1986). Thus, people who hold attitudes about unsafe sex or condoms based solely on celebrity cues are less likely to resist arguments and pressure to engage in this activity than are people who have developed attitudes following careful reflection upon the personal dangers inherent in the behaviors (compare Persons E and F in Fig. 6.2). In summary, attitudes changed via the central route tend to be based on active thought processes resulting in a well-integrated cognitive structure, but attitudes changed via the peripheral route are based on more passive acceptance (or rejection) of simple cues and have a less well-articulated structure. The basic ideas of the ELM are presented schematically in Fig. 6.3.

Our discussion of the central and peripheral routes to persuasion indicates that active participation in the persuasion process is critical if one wishes to produce stable attitude changes that are influential in behavior and resistant to contrary forces. It is worth noting that drug prevention programs developed in the 1980s have incorporated a greater degree of active participation and "inoculation" by having participants discuss personal values with respect to drugs, actively question the information provided, and engage in role-playing scenarios in which drugs are refused (e.g., Botvin, Baker, Renick, Filazzola, & Botvin, 1984; Delong, 1987). Similar strategies show promise in AIDS education programs as well (Kelly, St. Lawrence, Hood, & Brashfield, 1989).
Motivating Message Thought: Personal Relevance and Vulnerability

The ELM highlights several ways in which one can have an impact on persuasion. First, one can attempt to control the arguments relevant to an issue (e.g., condom use) by providing information as to the central merits of the position advocated (e.g., condoms greatly reduce the chance of HIV infection). Next, one can control the use of peripheral cues that allow favorable or unfavorable attitude formation in the absence of a diligent consideration of the true merits of the object or issue (e.g., associating condoms with liked celebrities). Whether arguments or cues have more impact on attitudes will depend on how motivated and able people are to think about the arguments. Thus, another way to influence the extent of persuasion is to modify the extent of argument elaboration (i.e., the intensity with which the message recipient thinks about and evaluates the central merits of the issue-relevant information presented). Finally, if a person is motivated and able to think about the arguments presented, one can attempt to influence the direction of any bias in elaboration (i.e., whether the thoughts generated are biased in a positive or negative direction; Petty & Cacioppo, 1990).

Personal Relevance. As the overall likelihood of elaboration is increased (whether thinking about the arguments proceeds in a relatively objective or a more biased fashion), the perceived quality of the issue-relevant arguments presented becomes a more important determinant of persuasion. As the likelihood of elaboration is decreased, however, peripheral cues become more important. That is, when the elaboration likelihood is high, the central route to persuasion dominates, but when the elaboration likelihood is low, the peripheral route takes precedence. The accumulated research on persuasion has pointed to many variables that can be employed to either increase or decrease the amount of thinking about a persuasive message, but perhaps the most important variable affecting a person's general motivation to think about a message is its perceived personal relevance (Petty & Cacioppo, 1979b).

A message can be high in self-relevance because it is perceived relevant to specific values, goals, outcomes, individuals, groups, or objects that are important to the person (Petty, Cacioppo, & Haugtvedt, 1992). For example, the use of condoms may be perceived to conflict with important religious values, and thus messages on that topic will be ignored. Or, young people may not place a high value on their own personal health and may therefore be generally uninterested in health communications. In one study (Radius, Dielman, Becker, Rosenstock, & Horvath 1980), for example, more than half of the adolescents surveyed reported that they were not concerned about their own health. If health was increased as a value among adolescents, attention to health messages should increase because the self-relevance of these messages would be enhanced.

Fortunately, there are a number of ways to enhance the perceived self-rele-
vance of a message without changing values. For example, if the perceived relevance of the topic is normally low, involvement can be increased by a variety of means such as emphasizing personal connections in the text of the message (e.g., "YOU can get AIDS," rather than "PEOPLE can get AIDS"; Burnkrant & Unnava, 1989), or by having people imagine realistic ways in which they might contract AIDS (Carroll, 1978; Cialdini, Gregory, & Carpenter, 1982; Sherman, Cialdini, Schwartzman, & Reynolds, 1985). If increasing relevance is difficult, increased message thinking can be motivated by other techniques such as summarizing the message arguments as rhetorical questions rather than as statements (e.g., "Isn't it a good idea to use condoms to prevent HIV transmission?"") rather than "It is a good idea to use condoms to prevent HIV transmission"; Petty, Cacioppo, & Heesacker, 1981), or by employing multiple sources to present the arguments rather than a single source (Harkins & Petty, 1983).

Consistent with the laboratory research cited here, research on health communications has clearly shown that messages need to be made more motivating for people who lack interest in the topic. For example, one study (Flora & Maibach, 1990) showed that employing vivid and emotionally absorbing AIDS communications (vs. pallid presentation of facts) could enhance message processing for people who did not see the AIDS issue as very self-relevant. For high-relevance subjects, however, vivid and non vivid messages were processed to the same high degree (see also, Rook, 1986).

**Perceived Vulnerability.** A potentially important factor in determining if an HIV message is seen as relevant to an individual is whether the person feels personally vulnerable to HIV infection. Not surprisingly, gay individuals feel more vulnerable to AIDS than health professionals, who feel more vulnerable than heterosexual college students (Fisher & Misovich, 1990). As Herek (1990) noted, educators may be tempted to inflate an audience's perception of risk for HIV in order to enhance the perception of vulnerability and increase attention to and thinking about the message. Will the threat or fear of vulnerability be useful or counterproductive in producing influence? Some researchers have advocated that moderate fear or personal concern can be effective in persuading people to avoid risky behaviors and to engage in preventive ones (e.g., Catania, Kegeles, & Coates, 1990). It is perhaps not too surprising that some of the largest changes in attitudes and behaviors relevant to AIDS have occurred as a result of treatment programs targeted at vulnerable populations such as the gay community (e.g., Mckusick, Conant, & Coates, 1985). On the other hand, other researchers have warned that stimulating fear of AIDS or very high concern can backfire by leading to avoidance of the AIDS issue and the psychological distress it produces (e.g., Friedman, Des Jarlais, & Sotheran, 1986; Joseph et al., 1987).

Social psychologists have long been interested in the role of fear and perceived vulnerability in persuasion. Various models have developed and although the models have their important differences (cf. Janis, 1967; Leventhal, 1970; Rogers, 1983), some common themes have emerged. For example, there is general agreement that very high levels of fear (or perceived vulnerability to a very noxious event) can produce defensive avoidance of a message, but moderate levels can be persuasive if the fear is coupled with the presentation of an effective and specific means of avoiding the threat. That is, even moderate fear of AIDS is likely to be counterproductive if the message does not leave people with the clear sense that they can do something to avoid the threat of AIDS. In his protection motivation theory, Rogers (1983) holds that the use of moderate fear in communications can motivate a need for reassurance that can be met by adopting the explicit recommendations in the persuasive communication.

An important issue that is unaddressed by the prevailing models, however, is whether the change induced by the use of fear is produced by the central or the peripheral route. In a study examining this issue, Gleicher and Petty (1992) hypothesized that consistent with protection motivation theory, moderate fear would induce a need for reassurance. However, the ELM holds that assurance can be obtained in one of two ways. A fearful person can simply accept the assertions of an expert that all is okay and ignore the true merits of the proposed solution to the threat, or the person can scrutinize the message itself in an attempt to seek reassurance. Gleicher and Petty found that overall, moderate fear subjects showed more acceptance of a solution to a threat than low-fear individuals, but which route to reassurance was taken depended on how the speaker introduced the solution to the threat. When the speaker, who was portrayed as an expert on the topic, indicated that the solution was highly likely to succeed, fearful subjects accepted the solution regardless of whether it was supported by strong or weak arguments. On the other hand, when the speaker indicated that the solution was only possibly effective, moderately fearful subjects processed the message and accepted the solution to a greater extent when the arguments presented were strong rather than weak.

This study suggests that an expert source presenting a proposal (e.g., using condoms) as a certain solution to a threatening situation (e.g., contracting AIDS) might produce considerable attitude change, but this change may not result from careful thinking about the reasons behind the solution. After all, if the solution is certain, there is little need to process this message. As a result of this non thoughtful change, the new attitude may prove vulnerable to subsequent strong counter messages because the change is based on little more than an expert's reassurance. On the other hand, if moderate fear or personal concern are raised, and an expert indicates that there is a possible solution, people will be motivated to actively process and think about the solution in order to obtain the desired reassurance.1

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1 It is important to note that high fear, in addition to producing defensive avoidance of a message, may also render a person unable to think about the merits of the solution presented.
Additional Considerations. In summary, a number of variables that are potentially under the control of health professionals constructing AIDS-relevant communications can have an impact on persuasion by influencing the message recipients' motivation to think about the communication. In addition to these controllable factors (e.g., the extent of fear used in a message) it is noteworthy that there are important individual differences in people's chronic enjoyment of thinking that affect overall motivation to process a variety of messages (i.e., "need for cognition," see Cacioppo, Petty, & Morris, 1983). It is also critical to note that still other variables, such as the extent of message repetition (Cacioppo & Petty, 1989) or the nature of any distractions present (Petty, Wells, & Brock, 1976) can have an important impact on the amount of persuasion by modifying a person's overall ability to think about the issue-relevant arguments presented. High motivation to think will do little good if ability is impaired.

Finally, as suggested earlier, it is important to consider that some variables affect information-processing activity in a relatively objective manner, whereas others introduce a systematic bias to the information-processing activity. For example, telling a highly involved audience that a message is specifically attempting to persuade them motivates active resistance and counterarguing rather than objective processing ( Petty & Cacioppo, 1979a). On the other hand, when people are motivated to think but are in a pleasant mood, they are biased in favor of generating favorable rather than unfavorable thoughts ( Petty, Gleicher, & Baker, 1991).

Multiple Roles for Variables in the ELM

One of the most important features of the ELM, is that it holds that any one variable can serve in each of the roles outlined earlier, although in different situations. That is, a variable can serve as a persuasive argument in some contexts, act as a peripheral cue in others, and affect the intensity of thinking or the direction of processing bias in still other domains. For example, in separate studies, researchers have shown that the attractiveness of a message source can: (a) serve as a simple peripheral cue when it is irrelevant to evaluating the merits of an attitude object and subjects are not motivated to process the issue-relevant arguments, (b) serve as a message argument when attractiveness is relevant to evaluating the merits of the attitude object and the elaboration likelihood is high, and (c) affect the extent of thinking about the message arguments presented when the elaboration likelihood is moderate (see Petty & Priester, in press, for a review).

If any one variable can influence persuasion by several means, it becomes critical to identify the general conditions under which the variable acts in each of the different roles. The ELM holds that when the elaboration likelihood is high (such as when perceived personal relevance and knowledge are high, the message is easy to understand, no distractions are present, etc.), people typically know that they want and are able to evaluate the merits of the arguments presented and they do so. Variables such as source attractiveness have little direct impact on evaluations by serving as simple cues in these situations. Instead, they may serve as arguments if relevant to the merits of the issue, or may bias the nature of the ongoing cognitive activity. On the other hand, when the elaboration likelihood is low (e.g., low personal relevance or knowledge, complex message, many distractions, etc.), people know that they do not want and/or are not able to evaluate the merits of the arguments presented (or they do not even consider exerting effort to process the message). If any evaluation is formed under these conditions, it is likely to be the result of relatively simple associations or inferences (e.g., "I agree with people I like"). When the elaboration likelihood is moderate (e.g., uncertain personal relevance, moderate knowledge, moderate complexity, etc). people may be uncertain as to whether or not the message warrants or needs scrutiny and whether or not they are capable of providing this analysis. In these situations they may examine the persuasion context for indications (e.g., is the source credible? similar to me?) of whether or not it is worthwhile or necessary to process the message.

Consequences of the Route to Persuasion

Because any one variable can produce persuasion in multiple ways, it is important to understand why the variable has worked. As we noted previously, the ELM holds that attitudes formed or changed by the central route tend to have different consequences and properties than attitudes modified by the peripheral route ( Petty & Haugtvedt, in press). For example, central route attitudes are more accessible than peripheral route attitudes. Because these attitudes come to mind more quickly and may be spontaneously accessible upon presentation of the relevant attitude object, they should be more likely to influence behavior ( Fazio, 1990). If a person's favorable attitude toward condoms comes to mind spontaneously on appropriate occasions, condoms are more likely to be used (assuming they are available) than if the favorable attitude toward condoms requires considerable cognitive effort to be retrieved. In fact, studies have shown that attitudes formed as a result of effortful thinking are more predictive of behavioral intentions than attitudes formed with little thinking ( Petty, Cacioppo, & Schumann, 1983; Verplanken, et al., 1991). Not surprisingly then, the attitudes of people who are highly involved with a health issue are more predictive of their health behavior intentions than the attitudes of people who are less involved (Hoverstad & Howard-Pitney, 1986).

Research also suggests that attitudes formed by the central route are more persistent over time and are more resistant to counterpersuasive attempts. For example, in two studies Haugtvedt and Petty (1992) produced similar attitude changes in individuals who differed in their need for cognition (Cacioppo & Petty, 1982). In each study, people were presented with a message containing strong arguments presented by a credible source. Both high and low need for cognition individuals become more favorable toward the position taken in the message, but presumably for different reasons. That is, high need for cognition
subjects who characteristically enjoy thinking were expected to change because of their elaboration of the high quality arguments that were presented. Low need for cognition subjects who act as cognitive misers were expected to change because of the positive source cue. In one of the studies, when attitudes toward the issue were examined just 2 days after the persuasive message, recipients low in need for cognition had returned to their initial positions, but high need for cognition subjects persisted in their new attitudes. In a second study, subjects' new attitudes were challenged just a few minutes after they were created. High need for cognition subjects resisted the attacking message to a greater extent than low need for cognition individuals.

In empirical research on AIDS prevention, many source, message, recipient, and contextual variables have and will continue to be examined. The ELM notes that it is critical to understand the processes by which these variables work. For example, some have noted that peer led health programs may be superior to those led by teachers (e.g., Jordheim, 1975). Even if research demonstrates that peers are more effective than teachers in changing attitudes overall, it would be important to know if this was because a peer source was serving as a simple positive cue, or if peers enhanced attention to and processing of the substantive arguments presented. If peers work by serving as simple cues to acceptance, they may be effective in the short term, but if they work by increasing thinking about the substantive arguments raised, the attitude changes induced will be stronger.

**ATTITUDE–BEHAVIOR LINKS**

As noted earlier, not all attitude changes lead to behavior change. Once a person's attitude has changed (e.g., has moved from anti- to pro-condom use), it is important that the new attitude rather than old habits guide behavior. Considerable research has addressed the link between attitudes and behavior and a number of situational and dispositional factors have been showed to enhance the consistency between them. For example, attitudes have been found to have a greater impact on behavior when: (a) the attitudes in question "match" the behaviors (e.g., attitudes toward purchasing condoms will predict condom purchasing behavior better than attitudes toward condoms in general), (b) the attitudes in question are consistent with underlying beliefs, (c) the attitudes are based on high rather than low amounts of issue-relevant information and/or personal experience, (d) the attitudes were formed as a result of considerable issue-relevant thinking, and (e) cues in the situation indicate that the person's attitude is relevant to the behavior (see Ajzen, 1988, for a comprehensive review).

**The Reasoned Use of Attitudes in Guiding Behavior**

Fazio (1990) has noted that two general models of the process by which attitudes guide behavior have achieved widespread acceptance. One type of model proposes that attitudes guide behavior in a reasoned manner, and the other suggests a more spontaneous process. The former type of theory is exemplified by Ajzen's (1988) theory of planned behavior. This theory, along with the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen's, 1975) on which it elaborates, assumes that behavioral choices are based on an analysis of the implications of the various actions. In this model, people are hypothesized to form intentions to perform or not perform behaviors, and these intentions are based on the person's attitude toward the behavior, perceptions of the opinions of significant others (norms), and perceptions of control over the behavior (i.e., the perceived ease or difficulty in performing the behavior). The fact that each of these factors can have a direct impact on behavioral intentions suggests that behavior change can be produced without any change in a person's attitudes if new normative pressures can be invoked (e.g., "I'll use condoms because it now appears that everyone else wants me to, not because I personally think they are valuable"), or perceptions of control change (e.g., "Now that condoms are readily available at school, I'll use them"). In these cases, the person's behavior changes because of a desire to please important others or because of new perceptions of control rather than out of any changes in personal attitudes.

Because the theory of planned behavior views behavior as a function of attitudes, norms, and perceptions of control, it suggests that if attitudes toward some desired behavior are already highly favorable, behavior may be further influenced in a positive direction by targeting beliefs about norms and control regarding the behavior. If attitudes are not already highly favorable, however, the theory suggests that relevant attitudes can be changed by having the message recipient focus on the personal costs and benefits of engaging in some behavior. In particular, the model focuses on the perceived likelihood that certain benefits will be obtained or costs avoided, and the desirability (aversiveness) of those benefits (costs). The specific beliefs that are relevant to health-related actions have been outlined in the Health Belief Model (Janz & Becker, 1984; Rosenstock, 1974) and include beliefs about: (a) one's personal susceptibility to some negative condition (e.g., Will I get AIDS if I engage in unsafe sex?), (b) the perceived severity of the condition (e.g., Will I die?), (c) the subjective benefits of engaging in a recommended action (e.g., Can I avoid AIDS if I use condoms?), and (d) the costs (financial, psychological, etc.) of the action (e.g., Will I be embarrassed, stigmatized?). That is, people are assumed to engage in health-related actions (e.g., stopping smoking, using condoms) to the extent that they believe that some health concern is serious, relevant to them, and the likely effectiveness and other benefits of the recommended action outweigh its costs. Of course, a person need not go through this extensive cognitive analysis every time the person is confronted with the attitude object. Instead, a relevant attitude or intention that was previously formed can be retrieved and direct behavior.
The Spontaneous Use of Attitudes in Guiding Behavior

Fazio (1990) proposed that much behavior is rather spontaneous and that attitudes can guide behavior by a relatively automatic process. Specifically, Fazio argued that attitudes can guide behavior without any deliberate reflection or reasoning if: (a) the attitude is accessed (comes to mind) spontaneously by the mere presence of the attitude object, and (b) the attitude colors perception of the object so that if the attitude is favorable (or unfavorable), the qualities of the object appear favorable (or unfavorable). For example, in the midst of a passionate moment, the various costs and benefits of using condoms may not be considered at all, or may be weighed only long after sexual activity has taken place. Instead, more accessible attitudes and beliefs (e.g., I want to have fun) may guide behavior.

Fazio (1990) argued that motivational and ability factors will be important in determining whether the reasoned action or the automatic activation process occurs. That is, for behavioral decisions that are high in perceived personal consequences, attitudes are likely to guide behavior by a deliberate reflection process, but when perceived consequences are low, spontaneous attitude activation should be more important. Similarly, as the time allowed for a decision is reduced, the importance of spontaneous attitude activation processes should be increased over more deliberative processes. A teen-ager at a party who is confronted with an opportunity for sexual activity in an environment with limited time for decision making, is not likely to engage in much cogitation. Thus, the salient attitudes of the moment are likely to guide choices. Unless attitudes regarding safe sex and condom use are sufficiently strong as to come to mind spontaneously, unsafe sexual activity may be selected. To the extent that prevention programs are effective in getting teen-agers to view sexual activity as a highly consequential and personally risky activity, more thought may precede the action. Or, if safe sex attitudes are initially based on considerable cognitive activity, they may come to mind spontaneously and influence behavior.

Contributions of Social Learning Theory

In some domains an accessible attitude is easily translated into behavior (e.g., I like Candidate X, I will vote for this candidate in the upcoming election). In other domains, however, translating new attitudes into new behaviors is rather complex because other attitudes may be in conflict (e.g., I like condoms, but I don’t like to buy them because it’s embarrassing). In addition, in the area of safe sex, people may need to acquire new skills (e.g., How do I introduce condoms into my sexual activity?) and self-perceptions (e.g., Do I have the confidence to talk to my partner about condoms?) that allow newly acquired attitudes to be translated into actions (Bandura, 1989). Furthermore, even if a new attitude produces new behavior, this new behavior may not persist in the absence of incentives. Bandura’s (1986) social (cognitive) learning theory provides a framework to understand these processes.

Like the central route to persuasion and the reasoned action approaches, the social learning perspective views voluntary behavior as determined in part by the personal consequences that an individual anticipates for various courses of action (Rosenstock, Strecher, and Becker, 1988). In addition, social learning theory notes that producing behavior change may require that a person learn new actions (skills) or new sequences of already acquired actions. Learning of new skills may occur by direct experience or by observing the behavior of others (modeling). The most effective models are people who are similar to the target or people the target admires. Unfortunately, models on television and the movies are not particularly health conscious and suggest many instances of unprotected sex (Wallack, 1989). If a person develops a negative attitude toward unprotected sex and a positive attitude toward condom use, but does not have the verbal skills to say no to unsafe sex when under pressure, or does not know when or how to introduce the subject of condoms to the partner, or where and how to buy them, any attitude change may be of little use.

Another important aspect of Bandura’s framework is the idea that people do not always behave optimally, even though they know the “correct” behaviors and have positive attitudes toward them. That is, people are not always motivated to translate their acquired skills into action. One particularly important cognitive determinant of whether skills are put into action concerns people’s assessments of self-efficacy or their behavioral competence (Ajzen, 1988; Bandura, 1982; Rogers, 1983). Judgments of self-efficacy are important because considerable research indicates that the more people see themselves as capable of engaging in various health behaviors (e.g., stopping smoking), the more likely they are to be successful in maintaining the desired behavior change (e.g., Strecher, DeVellis, Becker, & Rosenstock, 1986).

IMPLICATIONS OF ATTITUDE THEORY FOR AIDS PREVENTION

Although considerable work has shown that it is possible to change people’s knowledge about AIDS, we have noted that these knowledge differences do not invariably turn into attitude and behavior changes. Our brief review of basic theory and research has emphasized that although attitudes can be changed with a simple strategy of associating a message with positive cues (e.g., attractive spokespersons), these attitude changes are unlikely to be very enduring, resistant to countervailing pressures, or result in lasting behavior change. Rather, information will be more successful in producing consequential attitude changes if people are motivated and able to think about the information presented, and this processing results in favorable cognitive and affective reactions. Furthermore,
once attitudes have changed, implementation of behavior change may require learning new skills and perceptions of self-efficacy.

Thus, current work on attitude and behavior change may help to account for some unsuccessful translations of AIDS knowledge and/or attitudes into appropriate behaviors. First, the acquired knowledge may have been seen as irrelevant by the recipients, or may have led to unfavorable rather than favorable reactions. Second, even if positive attitude changes were induced, the changes may have been based on simple peripheral cues rather than elaborative processing of the message. Third, even if attitude changes were produced by the central route, the people influenced may have lacked the necessary skills or self-confidence to translate their new attitudes into action.

Perhaps the most important issue raised in our review is that although some attitudes are based on a careful reasoning process in which externally provided information is related to oneself and integrated into a coherent knowledge structure, other attitudes are formed as a result of relatively simple cues in the persuasion environment. Although both types of processes can lead to attitudes similar in their valence (how favorable or unfavorable they are), there are important consequences of the manner of attitude change. Because the goal of persuasive communications about AIDS is to produce long-lasting changes in attitudes with behavioral consequences, the central route to persuasion appears to be the preferred influence strategy. Unfortunately, this is not simple. The recipient of the new information must have the motivation and ability to process the new information.

As noted previously, one of the most important determinants of motivation to think about a message is the perceived personal relevance of that message. When personal relevance is high, people are motivated to scrutinize the information presented and integrate it with their existing beliefs, but when perceived relevance is low, messages may be ignored or processed for peripheral cues. Many people in the population may feel that AIDS messages are not relevant to them or have few consequences for them. An important goal of any education strategy will be to increase people's motivation to think about AIDS messages by increasing the perceived personal relevance of these messages. Because people tend to think of themselves as less at risk than others for a variety of health threats including HIV infection (Weinstein, 1989), increasing perceptions of vulnerability may be an important initial step in increasing the relevance of AIDS messages. Doing this will likely require changing the pervasive stereotype of the typical HIV vulnerable person as gay, promiscuous, or an IV drug user. To the extent that this stereotype remains, and people compare themselves to this stereotype, they will continue to feel invulnerable (see Perloff & Fetzer, 1986). The stereotype of the AIDS-vulnerable person needs to change so that more people can identify with it. One note of caution, however, is that if personal fear becomes too high, people may defensively avoid thinking about AIDS messages or rely on confidently presented reassurances from experts rather than their own thoughtful assessment of the validity of the expert's recommendations.

It is also important to note that even if people can be motivated to attend to and think about AIDS-relevant communications, it is critical that they respond to these messages with favorable cognitive and affective reactions. It is likely that different types of information will be responded to favorably by different segments of the population. For example, arguments that are successful in producing favorable reactions in conservative Southern Baptists may elicit mostly counter-arguments from inner-city teen-agers. Considerable research is needed on the types of messages that will engage attention and elicit favorable thoughts and implications when presented to different audiences. Thus, campaign planners will need to engage in considerable pretesting of the content of public service messages to ensure that they elicit the appropriate responses in the target populations.

Finally, even if the appropriate attitudes are changed, a new attitude cannot influence behavior if it does not come to mind prior to the opportunity for behavior, or if people lack the necessary skills or confidence to implement their new attitudes. For example, if a person has recently come to the conclusion that condoms are useful and has formed an appropriate positive attitude, this does no good if the positive attitude is not accessible when confronted with a sexual opportunity. The new favorable attitude might be retrievable, but only if cues in the environment provoke reflection. People will need to be encouraged to think before they act so that their new attitudes rather than old habits or salient situational cues are influential. As noted earlier, people will also need to acquire the behavioral skills to implement their new attitudes.

In addition, a person may have formed a tentative favorable positive attitude toward condom use, but if the person's initial experience is unpleasant or embarrassing, two contrary attitudes are formed—"condoms are supposed to be good" and "condoms are unpleasant." Because beliefs and attitudes based on direct experience come to mind more readily than attitudes that are based solely on externally provided information, the effectiveness of the positive condom attitude is at a competitive disadvantage (Fazio & Zanna, 1981). To the extent that these effects are anticipated, prevention programs can incorporate role-playing and other direct experiences in which people receive practice in dealing with these contrary feelings, should they arise.

In summary, we note that research on social influence has come a long way from the early notion that providing factual information alone was sufficient to influence attitudes and behavior. Social influence is a complex, although explicable process. We now know that the extent and nature of a person's cognitive responses to external information may be more important than learning the information itself. We know that attitudes can be changed in different ways (central vs. peripheral routes), and that some attitude changes are more stable, resistant, and predictive of behavior than others. We also know that even apparently simple variables (such as how likeable a source) can produce persuasion by very different processes in different situations, and that some attitude changes will need to be supplemented with skills training before they will have an impact.
on behavior. We hope our brief review of current thinking about attitude and behavior change processes may have some utility for developing and evaluating AIDS prevention messages.

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