

Social Cognitive Theory and Exercise of Control over HIV Infection

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Prevention of infection with the AIDS virus requires people to exercise influence over their own behavior and their social environment. Societal efforts designed to control the spread of AIDS have centered mainly on informing the public on how the human immunodeficiency virus (HIV) is transmitted and how to safeguard against such infection. It is widely assumed that if people are adequately informed about the AIDS threat they will take appropriate self-protective action. Heightened awareness and knowledge of health risks are important preconditions for self-directed change. Unfortunately, information alone does not necessarily exert much influence on refractory health-impairing habits. To achieve self-directed change, people need to be given not only reasons to alter risky habits but also the behavioral means, resources, and social supports to do so. Effective self-regulation of behavior is not achieved by an act of will. It requires certain skills in self-motivation and self-guidance (Bandura, 1986). Moreover, there is a major difference between possessing self-regulative skills and being able to use them effectively and consistently under difficult circumstances. Success, therefore, requires strong self-belief in one's efficacy to exercise personal control

Perceived self-efficacy is concerned with people's beliefs that they can exert control over their own motivation, thought processes, emotional states and patterns of behavior. People's beliefs about their capabilities affect what they choose to do, how much effort they mobilize, how long they will persevere in the face of difficulties, whether they engage in self-debilitating or self-encouraging thought patterns, and the amount of stress and depression they experience in taxing situations. When people lack a sense of self-efficacy, they do not manage situations effectively even though they know what to do and possess the requisite skills. Self-doubts override knowledge and self-protective action.

Numerous studies have been conducted linking perceived self-efficacy to health-promoting and health-impairing behavior (Bandura, 1991a; O'Leary, 1985). The results show that perceived self-efficacy can affect every phase of personal change -- whether people even consider changing their health habits, how hard they try should they choose to do so, how much they change, and how well they maintain the changes they have achieved. In addition to influencing health habits, a low sense of efficacy in coping with stressors activates autonomic, catecholamine, and endogenous opioid systems that can impair immune function (Bandura, 1991a; Maier, Laudenslager, & Ryan, 1985).

Translating health knowledge into effective self-protection action against AIDS infection requires social and self-regulative skills and a sense of personal power to exercise control over sexual and drug activities, the two major transmitter modes of the AIDS virus. As Gagnon and Simon (1973) have correctly observed, managing sexuality involves managing interpersonal relationships. Thus, risk reduction calls for enhancement of interpersonal efficacy rather than simply targeting a specific infective behavior for change. The major problem is not teaching people safer sex guidelines, which is easily achievable, but equipping them with skills and self-beliefs that enable them to put the guidelines consistently into practice in the face of counteracting influences. Difficulties arise in following safer sex practices because self-protection often conflicts with interpersonal pressures and sentiments. In these interpersonal situations the sway of coercive threat, allurements, desire for social acceptance, social pressures, situational constraints, fear of rejection and personal embarrassment can override the influence of the best of informed judgment. Women have the lowest assurance in their efficacy to exercise control over pressures by a desirable partner to engage in unprotected intercourse that potentially places them at risk of infection (Kasen, Vaughan, & Walter, 1992). Experiences of forced

unwanted intercourse, which are not uncommon, lower women's sense of efficacy to negotiate safer sex (Heinrich, in press). The weaker the perceived self-efficacy, the more such social and affective factors can increase the likelihood of risky sexual behavior.

Exercise of personal control over sexual behaviors that carry risk of infection calls on skills and self-efficacy in communicating frankly about sexual matters and protective sexual methods and ensuring their use. Some of the people who perceive a personal risk of sexually transmitted disease are reducing the number of sexual partners and are more wary of engaging in sex with casual partners. Ignorance of a partner's sexual and drug activities has become a new risk factor. However, to rest self-protection on partners' reports of their sexual and drug history is a hazardous safeguard. Sexual ardor and impression management can readily expurgate risky histories in personal disclosures. Most people in steady relationships see little need for protective measures through belief in their partner's monogamousness and negative serostatus. However, youth often go through a series of relationships resulting in exposure to multiple partners, usually of unknown serostatus. Moreover, survey studies reveal that a majority of "monogamous" relationships are so in name rather than in actual practice. Because the AIDS virus is transmittable heterosexually, occasional sex with partners outside a monogamous relationship, especially those who have had bisexual or drug involvements, expands the range of potential risk for heterosexuals as well.

Subjective risk appraisal for AIDS infection is highly unreliable because infected individuals remain asymptomatic for a long time and their sexual and drug history often remain a private matter. Lacking knowledge of the behavioral history and serostatus of sexual partners, people tend to make their risk appraisals on the basis of social and physical appearances, which can be highly misleading. Given evidence that most males would lie about their sexual history to gain sex (Keeling, 1989), seeking protection through probing inquiry provides illusory safety. Indeed, the stronger people believe in their personal efficacy to assess by inquiry the risk status of a new partner, the more likely they are to engage in unprotected intercourse (O'Leary, Goodhart, Jemmott, & Boccher-Lattimore, 1992). Hence, the development of communicative efficacy should center on skills for negotiating safer sex practices rather than for history taking of highly suspect reliability.

Even people who are well informed on safer-sex guidelines often err in their subjective appraisal of the extent to which they are putting themselves at risk of HIV infection. Bauman and Siegel (1987) found that gay men practicing hazardous sex underestimate the riskiness of their behavior as judged against epidemiologically established linkage to seropositivity. Misappraisals of riskiness of one's sexual practices tend to be associated with underestimation of personal susceptibility to infection, with misbeliefs that risky sex with a few regular partners is safe, and erroneous beliefs that behavioral precautions that actually have no protective value (showering before and after sexual contact, healthful regimens, inspecting partners for lesions) will render risky sex safe. Such findings underscore the need for risk-reduction messages not only to describe risky sexual practices but to correct common misbeliefs about irrelevant factors that invest risky practices with false safety.

In managing sexuality and intravenous drug use, people have to exercise influence over themselves as well as over others. This requires self-regulative skills in motivating and guiding one's actions. Self-regulation operates through internal standards, affective reactions to one's own conduct, use of motivating self-incentives and other forms of cognitive self-guidance (Bandura, 1986, 1991b). Self-regulative skills thus form an integral part of risk-reduction capabilities. They partly determine the social situations into which people get themselves, how

well they navigate through them, and how effectively they can resist social inducements to potentially risky behavior. It is not often that people deliberately set out to entangle themselves in highly risky activities. Rather, they make a series of seemingly innocuous choices that eventually culminates in risky involvements. Effective self-regulation, therefore, requires self-monitoring skills for recognizing and aborting potential entanglement scenarios early in the chain of portentous decisions. It is easier to wield control over preliminary choice behavior likely to lead to troublesome social situations than to try to extricate oneself from such situations while enmeshed in them. This is because the antecedent phase involves mainly anticipatory motivators which are amenable to cognitive control; the entanglement phase includes stronger social inducements to engage in high-risk behavior which are less easily manageable.

In some countries, such as Africa, Latin America and the Caribbean, AIDS is almost exclusively a heterosexually transmitted disease, with untreated venereal diseases increasing susceptibility to HIV infection. In Europe and the United States, the route of heterosexual transmission is mainly via bisexuals and intravenous drug users infected by sharing contaminated needles. Southern Asian countries are witnessing a rapid spread of infection among intravenous drug users which then spreads to heterosexual partners and their newborns (Des Jarlais & Friedman, 1988b). Control of the spread of the AIDS virus by intravenous drug users requires risk-reduction strategies aimed at both drug and sexual practices. Relatively little effort has been devoted to developing interventions to prevent infection among intravenous drug users. This is a serious neglect because infected drug users are transmitting the virus heterosexually to their female sexual partners who, in turn, run a high chance of infecting their infants through perinatal transmission. As a result, AIDS is taking an increasingly heavy toll on women and children, especially among ethnic minorities in impoverished environs where drug use is prevalent. Those who continue to inject drugs intravenously, despite cognizance of the threat of AIDS infection, need access to sterile needles and knowledge on how to disinfect needles to safeguard against transmission of the virus. They need to be taught protective sexual practices to avoid infecting their sexual partners and be persuaded to use them consistently.

Perceived Self-Efficacy and Adoption of Health Practices

People's beliefs that they can motivate themselves and regulate their own behavior plays a crucial role in whether they even consider altering habits detrimental to health. They see little point to even trying if they believe they cannot exercise control over their own behavior and that of others. Even people who believe their detrimental habits may be harming their health achieve little success in curtailing their behavior unless they believe they have sufficient efficacy to resist the instigators to it. This observation is corroborated in a longitudinal study conducted by McKusick, Wiley, Coates, and Morin (1986) of gay men's sexual behavior. Several psychological factors that could influence sexual risk-taking behavior were assessed. These included perceived threat that one is potentially at risk of exposure to the AIDS virus; degree of peer support for adopting safer sexual behavior; social skills necessary to negotiate protective sexual behavior; level of self-esteem; and perceived self-efficacy that one can take protective actions that lessen the risk of AIDS infection. Belief in one's personal efficacy to exercise control over one's sexual behavior emerged as the best predictor of sexual risk-taking behavior. The lower the perceived self-efficacy, the higher the likelihood of engagement in sexual practices that carry a high risk of AIDS infection. Men who frequented bars and bath houses had a lower sense of efficacy than those who were committed to a monogamous relationship. Social

skill in negotiating self-protective sexual activity was also associated with low-risk sexual practices.

The role of perceived self-efficacy in the adoption and maintenance of self-protective behavior is corroborated in other lines of research. Even though individuals acknowledge that safer sex practices reduce risk of infection, they do not adopt them if they believe they cannot exercise control in sexual relations (Siegel, Mesagno, Chen, & Christ, 1989). Perceived self-efficacy to negotiate condom use predicts safer sex practices in adolescents (Basen-Engquist & Parcel, 1992; Jemmott, Jemmott, & Fong, 1992; Jemmott, Jemmott, Spears, Hewitt, & Cruz-Collins, 1991; Kasen, et al., 1992) and adults (Brafford & Beck, 1991; Henrich, in press; O'Leary, et al., 1992). Alcohol and drug use in the context of sexual activity foster sexual behaviors at high risk of infection. Drugs and alcohol lower perceived self-efficacy to adhere to safer sex practices (Kasen, et al., 1992; Rosenthal, Moore, & Flynn, 1991). Among drug users, perceived self-efficacy predicts success in regular use of clean needles and condoms with sexual partners (Kok, deVries, Mudd & Strecker, 1991). Perceived self-efficacy is related to self-protective behavior both concurrently and longitudinally.

The spreading threat of AIDS has produced substantial changes in sexual practices in the gay community as shown in reduction of high-risk sexual acts and number of sexual partners. In the study of longitudinal predictors, McKusick and his colleagues found that a strong sense of efficacy to exercise self-protective control, association with groups that made safer sex the norm, and knowledge of serostatus were the significant predictors of enduring reductions in high-risk sexual practices (McKusick, Coates, Morin, Pollack, & Hoff, 1990) The reductions in high-risk practices accompanying each of these three sources of influence are summarized in Figure 1. These longitudinal predictors underscore the importance of self-efficacy enhancement through skill development and alterations of subcommunity norms in programs designed to produce long-term behavior change.

 Insert Figure 1 about here

COMPONENTS OF EFFECTIVE SELF-DIRECTED CHANGE

Social cognitive theory explains human functioning in terms of triadic reciprocal causation (Bandura, 1986). In this causal model, which is summarized schematically in Figure 2, (1) personal determinants in the form of cognitive, affective and biological factors, (2) behavior, and (3) environmental influences all operate as interacting determinants of each other. An effective program of widespread change in detrimental health practices includes four major components aimed at altering each of the three classes of interacting determinants. The first is informational, designed to increase people's awareness and knowledge of health risks. The second component is concerned with development of the social and self-regulative skills needed to translate informed concerns into effective preventive action. The third component is aimed at skill enhancement and building resilient self-efficacy by providing opportunities for guided practice and corrective feedback in applying the skills in high-risk situations. The final component involves enlisting and creating social supports for desired personal changes. Let us consider how each of these four components would apply to self-directed change of behaviors that pose high risk of AIDS infection.

 Insert Figure 1 about here

Informational Component

Efforts to encourage people to adopt health practices rely heavily on persuasive communications in health education campaigns. In such health messages, appeals to fear by depicting the ravages of disease are often used as motivators, and recommended preventive practices are provided as guides for action. People need enough knowledge of potential dangers to warrant action, but they do not have to be scared out of their wits to act, any more than homeowners have to be terrified to insure their households. Rather, what people need is sound information on how AIDS is transmitted, guidance on how to regulate their behavior, and firm belief in their personal efficacy to turn concerns into effective preventive actions. Responding to these needs requires a shift in emphasis from trying to scare people into healthy behavior to empowering them with the tools for exercising personal control over their health habits.

The influential role of people's beliefs in their personal efficacy in adopting preventive health practices is shown by Beck and Lund (1981). They studied the persuasiveness of health communications in which the seriousness of a disease and susceptibility to it were varied. Patients' perceived self-efficacy that they could stick to the required preventive behavior was a good predictor of whether they adopted the preventive practices. Fear arousal had little effect on whether or not they did so. Analyses of the mechanisms through which mass media health campaigns exert their effects similarly reveal that perceived self-efficacy plays an influential role in the adoption of health practices (Maibach, Flora, Nass, 1991; Slater, 1989). The stronger the preexisting perceived self-efficacy, and the more the media campaigns enhance people's self-regulative efficacy, the more likely they are to adopt the recommended practices. The relationship remains even when multiple controls are applied for a host of other possible influences.

To be most effective, health communications should instill in people the belief that they have the capability to alter their health habits and should instruct them on how to do it. Communications that explicitly do so increase people's determination to modify habits detrimental to their health (Maddux & Rogers, 1983). Entrenched habits rarely yield to a single attempt at self-regulation. Success is usually achieved through renewed effort following failed attempts. To strengthen the staying power of self-beliefs, health communications should emphasize that success requires perseverant effort, so that people's sense of efficacy is not undermined by a few setbacks to the point where they get discouraged and give up. Faultless self-regulation is not easy to come by even for pliant habits, let alone for addictive and sexual behavior. A strong sense of controlling efficacy is built by overcoming setbacks through perseverant effort. Unfortunately, the possibility that the AIDS virus is transmittable to the immunologically vulnerable through a few sexual contacts with infected partners or sharing a few contaminated needles does not leave much room for carelessness or occasional reversions to risky habits.

An increased research effort is needed to determine how preventive health communications should be framed to maximize their impact on perceived self-regulative efficacy. Self-efficacy theory provides one set of guidelines (Bandura, 1986). I shall consider later how symbolic modeling influences should be structured to maximize their psychosocial

impact. Decision theory regarding risk perception and risky decisions provides other suggestions (Tversky & Kahneman, 1981). For example, people interpret information regarding risky activities in terms of potential gains and potential losses. There is some evidence to suggest that health communications are more persuasive if framed in terms of health losses to get people to check for maladies, but in terms of health benefits to get them to adopt preventive behavior (Rothman, Salovey, Antone, Keough, & Drake, in press). Meyerowitz and Chaiken (1987) found that health communications framed in terms of health benefits had less impact on perceived self-efficacy and behavior designed to detect maladies than communications framed in terms of health losses. They examined four alternative mechanisms through which health communications could alter health habits -- by transmission of factual information, fear arousal, change in risk perception and enhancement of perceived self-efficacy. The health communications fostered adoption of preventive health practices mainly by their effect on perceived self-efficacy. National education campaigns need to exploit more fully our knowledge of social-influence processes, and the cognitive and affective mechanisms governing human motivation and behavior.

The preconditions for change are created by increasing people's awareness and knowledge of the profound threat of AIDS. They need to be provided with a great deal of factual information about the nature of AIDS, its modes of transmission, what constitutes high risk sexual and drug practices, and how to achieve protection from infection. This is easier said than done. Our society does not provide much in the way of treatment of drug addiction, nor is about to provide refractory drug users with easy access to sterile needles and other drug paraphernalia. It has little experience in how to reach and educate drug users on how to disinfect needles to reduce the risk of AIDS infection.

In the sexual domain, our society has always had difficulty talking frankly about sex and imparting sexual information to the public at large. Because parents generally do a poor job of it as well, most youngsters pick up their sex education from other, often less trustworthy and reputable, sources outside the home or from the consequences of uninformed sexual experimentation. To complicate matters further, some sectors of the society lobby actively for maintaining a veil of silence regarding protective sexual practices on the belief that such information will promote indiscriminate sexuality. In their view, the remedy for the spreading AIDS epidemic is a national celibacy campaign for unweds and gays and faithful monogamy among the wedded. They oppose educational programs in the schools that talk about sex methods that provide protection against AIDS infection.

The net result is that many of our public education campaigns regarding AIDS are couched in desexualized generalities that leave some ignorance in their wake. To those most at risk, such sanitized expressions as "exchange of bodily fluids" is not only uninformative but can be misinformative by investing safe bodily substances with perceived infective properties. Even those more skilled in deciphering medical locutions do not always know what the preventive messages are talking about. For example, an intensive campaign spanning a full week, conducted at a university campus, included public lectures, numerous panel discussions, presentations in dormitories, and condom distribution, all of which were widely reported in the campus newspaper. A systematic assessment of students' beliefs and sexual practices conducted several weeks later revealed that more than a quarter of the students did not know what constitutes "safer sex," and some of them had misconceptions of safer sex practices that, in fact, would present high risk of infection (Chervin & Martinez, 1987). Other findings of this study, which will be

reviewed later, document the severe limitations of efforts to change sexual practices by information alone.

The informational component of the model of self-directed change includes two main factors--the informational content of the health communications and the mechanisms of social diffusion. Detailed factual information about AIDS must be socially imparted in an understandable, credible, and persuasive manner. Social cognitive theories provide a number of guidelines on how this might be best accomplished (Bandura, 1986; McGuire, 1984; Zimbardo, Ebbesen, & Maslach, 1977). However, developing effective AIDS prevention programs is only the first step. They must also be disseminated. Unlike other health risk-reduction campaigns which involve relatively prosaic habits, the risky habits for AIDS infection are laden with matters of illegalities and judged immoralities.

Informative health messages, however well designed, cannot have much social impact without effective means of dissemination. Because of their wide reach and influence, the mass media, especially television, can serve as a major vehicle of social diffusion of information regarding health guidelines. However, a variety of diffusion vehicles must be enlisted in a public health campaign for several reasons. High costs and restricted access to television limit its availability. Moreover, television networks typically adopt a conservative stance on controversial matters. They have resisted getting into the act for fear that talk of protective sex practices will jeopardize advertising revenue by arousing the wrath of some sectors of their viewing audience. This resistance would have weakened if the AIDS virus had spread rapidly heterosexually across all sectors of society, thus making it a general societal problem rather than one confined to gays and drug users. However, it is unlikely that the television industry will offer much help as long as AIDS remains mainly a disease of poor minorities. Existing social, religious, recreational, occupational, and educational organizations can serve as highly effective disseminators of preventive health guidelines. Wide cultural diversity requires that the messages of risk-reduction campaigns for AIDS be tailored to socioeconomic, racial and ethnic differences in value orientations and disseminated through multiple sources to ensure adequate exposure (Mantell, Schinke, & Akabas, 1988).

Nontraditional social networks must be enlisted for high-risk groups who are beyond the reach of the usual community organizations. For example, in outreach programs, "street-wise" counselors have been highly successful in reaching drug populations (Watters, et al., 1990). After they become known in the social circles of drug users, the counselors help them with referrals to drug treatment programs. They offer them explicit instruction in safer sex practices. They teach intravenous drug users how to reduce the risk of AIDS by disinfecting needles with ordinary household bleach which kills the HIV virus. The disinfection procedure, which had been rarely used before, was widely adopted and consistently applied. Although this outreach program also increased the use of condoms, the drug users were much more conscientious in disinfecting needles than in protecting their sexual partners against sexually transmitted infection. Such findings underscore the need for sexual partners to exercise personal control in protecting their own health.

A comprehensive national program regarding the growing AIDS threat must address broader social issues as well as risky health practices. This is because the AIDS epidemic has far-reaching social repercussions. One of these issues concerns the widespread public fear of AIDS infection. Many people continue to believe that the AIDS virus can be transmitted by casual contact or by insect transmission and food handling despite evidence to the contrary. Efforts by health professionals to dispel misapprehensions are discounted by many of those who

are alarmed on the grounds that what is proclaimed safe currently may be discovered to be risky later. Recurrent disputes among researchers in the public media regarding risk factors for other diseases have eroded some of the credibility of medical expertise. Widespread public fear gets translated into advocacy of laws requiring sweeping mandatory blood testing and identification and social restriction of those with antibodies to the HIV virus.

In public perceptions of the AIDS threat, risky behavior gets transformed to risky groups. As AIDS imposes mounting financial burdens on society and strains medical and social service systems, members of high-risk groups tend to become targets of growing public hostility. Once entire groups get stigmatized because some of its members behave in risky ways, those who do not also become the objects of fear and hostility. The way in which they are treated socially may be dictated more by group identity than by their personal characteristics. Public alarm fueled by many misbeliefs enhances such stigmatization. Policy debates on how to control the spread of AIDS have become highly politicized. Prohibitionists argue that public health campaigns promote indiscriminate sex. Their critics argue that knowledge does not foster sexuality and that prohibitionists are intent at curtailing sex practices they find morally objectionable rather than at increasing the safety of sex. Uninformed public reactions to the AIDS threat require serious attention as do the risky health practices themselves, because they help to shape public policies and impose constraints on health education programs. Even societies that possess the necessary scientific knowledge, resources and expertise can be immobilized by conflicts of values and morals from establishing psychosocial programs that can help to stem the tide of infection.

Development of Self-Protective Skills and Controlling Self-Efficacy

It is not enough to convince people that they should alter risky habits. Despite a high level of knowledge, many continue risky sexual and drug practices. People also need guidance on how to translate their concerns into efficacious actions. In the campus survey mentioned earlier (Chervin & Martinez, 1987), after exposure to the intensive educational campaign less than half of the students who were sexually active used safer sex methods designed to prevent infection with sexually transmitted diseases. Most of them even avoided talking about the matter with their sexual partners. Studies conducted on other campuses similarly reveal that most sexually active students who are knowledgeable about AIDS do not adopt safer sex practices (Edgar, Freimuth, & Hammond, 1988). Among inner-city youth, neither a high level of factual knowledge about HIV transmission nor even knowing someone who was infected or had died of AIDS reduce behaviors that carry high risk of infection (Stiffman, Earls, Dore, & Cunningham, 1992). McKusick, Horstman and Coates (1985) similarly found that gay men were uniformly well informed about safer sex methods for protecting against AIDS infection, but those who had a low sense of efficacy that they could manage their behavior and sexual relationships were unable to act on their knowledge.

The ability to learn by social modeling provides a highly effective method for increasing human knowledge and skills. A special power of modeling is that it can simultaneously transmit knowledge and valuable skills to large numbers of people through the medium of videotape modeling. Knowledge of modeling processes identifies a number of factors that can be used to enhance the instructive power of modeling (Bandura, 1986). Applications of modeling principles to AIDS prevention would focus on how to manage interpersonal situations and one's own behavior in ways that afford protection against infection with the AIDS virus. Both self-

regulative and risk-reduction strategies for dealing with a variety of situations that promote risky behavior should be modeled to convey general guides that can be applied and adjusted to fit changing circumstances.

We saw earlier that human competency requires not only skills but also self-belief in one's capability to use those skills well. Indeed, results of numerous studies of diverse health habits and physical dysfunctions reveal that the impact of different methods of influence on health behavior is partly mediated through their effects on perceived self-efficacy (Bandura, 1992). The stronger the self-efficacy beliefs they instill, the more likely are people to enlist and sustain the effort needed to change habits detrimental to health. Modeling influences should, therefore, be designed to build self-assurance as well as to convey strategies for how to deal effectively with coercions for risky practices. The influence of modeling on beliefs about one's capabilities relies on comparison with others. People judge their own capabilities, in part, from how well those whom they regard as similar to themselves exercise control over situations. People develop stronger belief in their capabilities and more readily adopt modeled ways if they see models similar to themselves solve problems successfully with the modeled strategies, then if they see the models as very different from themselves (Bandura, 1986). To increase the impact of modeling, the characteristics of models such as their age, sex, and status, the type of problems with which they cope, and the situation in which they apply their skills, should be made to appear similar to the people's own circumstances.

Enhancement of Social Proficiency and Resiliency of Self-Efficacy

Proficiency requires extensive practice and this is no less true of managing the interpersonal aspects of sexuality. After people gain knowledge of new skills and social strategies, they need guidance and opportunities to perfect those skills. Initially, people practice in simulated situations where they need not fear making mistakes or appearing inadequate. This is best achieved by role-playing in which they practice handling the types of situations they have to manage in their social environment. They receive informative feedback on how they are doing and the corrective changes that need to be made. The simulated practice is continued until the skills are performed proficiently and spontaneously.

Not all the benefits of guided practice are due to skill improvement. Some of the gains result from raising people's beliefs in their capabilities (Bandura, 1988b). Experiences in exercising control over social situations serve as self-efficacy builders. This is an important aspect of self-directed change because if people are not fully convinced of their personal efficacy they undermine their efforts in situations that tax capabilities and readily abandon the skills they have been taught when they fail to get quick results or suffer reverses. The important matter is not that difficulties rouse self-doubts, which is a natural immediate reaction, but rather the degree and speed of recovery from setbacks. It is resiliency in perceived self-efficacy that counts in maintenance of changes in health habits. The higher the perceived self-efficacy, the greater is the success in maintenance of health-promoting behavior (Bandura, 1992).

The influential role played by perceived self-efficacy in the management of sexual activities is documented in studies of contraceptive use by teenage women at high risk because they often engage in unprotected intercourse (Kasen, et al., 1992; Levinson, 1986). Such research shows that perceived self-efficacy in managing sexual relationships is associated with more effective use of contraceptives. The predictive relation remains when controls are applied for demographic factors, knowledge and sexual experience.

Gilchrist and Schinke (1983) applied the main features of the multi-component model of personal change to teach teenagers how to exercise self-protective control over sexual situations. They received essential factual information about high-risk sexual behavior and self-protective measures. Through modeling they were taught how to communicate frankly about sexual matters and contraceptives, how to deal with conflicts regarding sexual activities, and how to resist unwanted sexual advances. They practiced applying these social skills by role playing in simulated situations and received instructive feedback. The self-regulative program significantly enhanced perceived self-efficacy and skill in managing sexuality. Botvin and his associates provide a comprehensive school-based program that teaches generative self-regulative skills for managing sexual activities and social pressures for alcohol and drug use (Botvin & Dusenbury, 1992).

The Jemmotts have developed and tested an AIDS prevention program incorporating the major elements of the self-regulative model with additional features designed to dispel beliefs that condom use reduces sexual pleasure. Participants are provided information about the cause, transmission and prevention of AIDS. They receive guided mastery training to enhance their sense of efficacy to negotiate and manage condom use. They are taught how to eroticize condom use to remove the attitudinal barrier to using them (Jemmott & Jemmott, 1992). The program produced significant AIDS risk reduction in African-American male adolescents (Jemmott, et al., 1992). Those who had the benefit of the program were more knowledgeable about infective risks, less accepting of risky practices, and reported engaging in lower risky sexual behavior with fewer sexual partners in follow-up assessments than did those in a control condition. Jemmott and his colleagues compared their social cognitive program with informational interventions that increased knowledge either about AIDS prevention or general health promotion (Jemmott, et al., 1991). The participants were sexually active African-American female adolescents recruited from a family planning clinic serving a low-income community. Compared to the information-only interventions, the sociocognitive program produced a greater sense of efficacy to negotiate condom use, more positive outcome expectations regarding sexual enjoyment with condoms and stronger intentions to use condoms. These diverse effects were replicated with sexually active African-American female adolescents drawn from the inner city (Jemmott & Jemmott, 1992). The stronger the instilled sense of efficacy and eroticization of condoms the stronger the intention to use them. AIDS knowledge, in itself, did not affect intentions to use condoms. These reproducible benefits of the sociocognitive model are of particular interest because they are achieved with both male and female adolescents at high risk of HIV infection through frequent unprotected sexual activity.

Research by Kelly and his colleagues further attests to the substantial value of self-regulative programs for AIDS risk reduction (Kelly, St. Lawrence, Hood, & Brasfield, 1989). Gay men were taught through modeling, role playing and corrective feedback how to exercise self-protective control in sexual relationships and to resist coercions for high-risk sex. Multifaceted assessments showed that they became more skillful in handling sexual relationships and coercions, they markedly reduced risky sexual practices and used condoms on a regular basis. As shown in Figure 3, these self-protective practices were maintained in follow-up assessments. In contrast, a matched control group of gay men continued to engage in unprotected high-risk sexual practices. In an extended follow-up, the majority of participants continued to adhere to safer sex practices, whereas the remainder, who had an earlier history of high level of risky behaviors, reported some behavioral lapses (Kelly, St. Lawrence, & Brasfield, 1991). The

highly vulnerable need even more intensive guidance on how to avoid or to manage risky situations. The issue of behavioral lapse prevention will be considered later.

Insert Figure 3 about here

Combining factual information about health risks with development of risk-reduction efficacy produces good results. Because people learn and perfect effective ways of behaving under lifelike conditions, problems of transferring the new skills to everyday life are reduced. The guided mastery approach is readily adaptable in audio or videocassette format to self-protective behavior against HIV infection. Large-scale applications of self-regulative programs sacrifice the guided role-playing component. However, instruction in imaginal rehearsal, in which people mentally practice dealing with prototypic troublesome situations, has been shown to boost perceived self-efficacy and improve actual performance in coping with threats (Bandura, 1986; Kazdin, 1978). Maibach and Flora (1992) tested the incremental benefits of cued cognitive rehearsal of self-protective strategies imbedded in videotaped modeling of how to manage potentially risky sexual activities. Cognitive rehearsal enhanced the power of symbolic modeling to strengthen a sense of personal efficacy to exercise self-protective control. The self-regulative approach, designed in a format suitable for mass distribution, has been shown to achieve some success in changing other refractory health-impairing behaviors (Sallis et al., 1986). Schinke and Orlandi (1990) are developing interactive computer formats as a vehicle for instructing youth in skills on how to manage unsafe drug and sexual activities. They role play with computer characters what they would say and do in risky situations and receive instructive feedback for improving their strategies. These approaches are designed to augment the essential skill-development component in educational preventive programs that usually provide little or no opportunity to become proficient in what is being taught. The format is easily adaptable to different subcultural values, customs and socioeconomic statuses.

Because of the high level of unprotected sexual activity and experimentation with drugs by adolescents, they are vulnerable to becoming a high-risk group as transmitters of the AIDS virus (Mantell & Schinke, 1990). Training materials need to be developed to assist parents and teachers on how to educate youngsters about AIDS. Winett and his colleagues devised a video prototype using modeling and cued rehearsal of self-protective skills for use in the home by parents and their teenagers (Winett, et al., 1992). This home-based program increased knowledge about HIV transmission and prevention, fostered more open communication between parents and their teenagers regarding sexuality, increased family problem-solving skills, and taught teenagers strategies on how to manage common risk situations. Further efforts to increase the power of this familial approach are centered on augmenting the skill-development component. The guided mastery programs developed by Gilchrist and Schinke (1983) and Botvin and Dusenbury (1992) provide good prototypes for application in schools. However, other channels of dissemination must be created to reach teenagers who live in dysfunctional families and receive little guidance from school because of factional opposition to educational efforts that address self-protective behavior in an explicitly informative manner. A major segment of the teenage population can be reached by making informative audio tapes and videocassettes readily available in the settings they frequent to convey skills and peer norms for safer sexual practices. Among sexually active adolescents, those who can talk with their partners

about the risks of HIV infection and perceive peer support for condom use tend to be consistent condom users (DiClemente, 1991).

AIDS infection is spreading rapidly among intravenous drug users and to their sexual partners and offspring. Efforts to control this source of infection are directed mainly at curtailing the supply of drugs, instituting risk reduction programs focused on disinfection and exchange of drug injection equipment, developing nonreusable syringes, and treating addictive conditions. These efforts must be supplemented by AIDS prevention programs designed to reduce the demand for drugs. As in other areas of habit change, informational campaigns alone will not do it. A comprehensive preventive effort must provide knowledge about the determinants, precipitants and immediate and long-term consequences of drug use, alter the valuation of drugs, develop self-regulative and social skills to resist social pressures to use drugs, and cultivate social norms that discourage experimentation with, and use of, drugs. This is best achieved by school-based primary prevention programs that have proven effective in other areas of health promotion and risk reduction (Flora & Thoresen, 1988; Killen, et al., 1989). Efforts at AIDS prevention are more likely to gain broad support if they are integrated into a comprehensive school-based program for health promotion rather than as a separate program.

The prototypic skills enhancement program developed by Gilchrist and Schinke (1985) has been successfully extended to the prevention and reduction of drug abuse by adolescents. This type of program informs adolescents about drug effects, provides them with interpersonal skills for managing personal and social pressures to use drugs, lowers drug use and fosters self-conceptions as a nonuser (Gilchrist, Schinke, Trimble, & Cvetkovich, 1987). These findings are all the more interesting because they were achieved with ethnic and minority youth among whom substance abuse is prevalent. Adoption of a self-conception as a nonuser can produce major lifestyle changes. This is most likely to occur when the emergent new self-conception leads to severance of social ties with substance abusers and sufficient social support is provided for immersion in nonuser social networks (Stall & Biernacki, 1986).

Social Supports for Personal Change

People achieve self-directed change when they understand how personal habits threaten their well-being, are taught how to modify them, believe in their capabilities to marshal the effort and resources needed to exercise control and have incentive to do so. However, personal change occurs within a network of social influences. Depending on their nature, social influences can aid, retard, or undermine efforts at personal change. This is especially true in the case of sexual and drug practices, which are subjected to strong social normative influences.

In social cognitive theory, normative influences regulate behavior through two regulatory systems -- social sanctions and self sanctions (Bandura, 1986). Social norms influence behavior anticipatorily by the social consequences they provide. Behavior that violates prevailing social norms brings social censure or other punishing consequences, whereas behavior that fulfills socially-valued norms is approved and rewarded. However, people do not act like weathervanes, constantly shifting their behavior to conform to whatever others might want. Rather, they adopt certain standards of behavior and regulate their actions anticipatorily through self-evaluative consequences they create for themselves. Social norms convey standards of conduct. Adoption of personal standards creates a self-regulative system that operates largely through internalized self-sanctions (Bandura, 1989). People behave in ways that give them self-

satisfaction, and they refrain from behaving in ways that violate their standards because it will bring self-censure. Anticipatory self-sanctions thus keep conduct in line with internal standards.

Normative consensus strengthens both its modeling and sanctioning functions. The normative influences that foster preventive measures center on the behavioral practices by which the virus is transmitted and on the cultural patterning of social relationships. Because of their proximity, immediacy, and prevalency, the interpersonal influences operating within one's immediate social network claim a stronger regulatory function than do general normative sanctions. The norms of the larger society are more distal and applied only infrequently to the behavior of any given individual because unfamiliar others are usually not around to react to it. Even when they are, if the norms of one's immediate network are at odds with those of the larger group, the reactions of outsiders carry lesser weight, if not disregarded altogether. Among drug-dependent women, the more their friends use and regard condoms positively, the stronger the womens' beliefs in their efficacy to overcome interpersonal barriers to safer sex practices (Mantell, et al., 1993). The findings further suggest that efficacy beliefs both mediate the influence of peer norms and operate independently on condom use. Thus, efficacy beliefs contribute to consistent use of condoms after controlling for the effects of peer attitudes and behavioral norms.

People who are fully informed on the modes of HIV transmission and effective self-protective methods acquire the virus only if they allow it to happen to themselves. They often allow it to happen because interpersonal, sociocultural, religious, and economic factors operate as constraints on self-protective behavior. Some of those most at risk must contend with sociocultural obstacles to the use of prophylactic methods that afford protection against HIV infection. The major burden for self-protection against heterosexually transmitted diseases usually falls on women. Unlike protection against pregnancy, where women can exercise independent control through oral or implant contraceptives, use of condoms requires them to exercise control over the behavior of men. Men who possess coercive power over their partners resist the use of condoms if, in their view, it reduces their sexual pleasure, threatens their sense of manliness and authority, casts aspersions on their faithfulness, and carries the frightening implication that they may be carriers of disease. It is difficult for women, especially those of poor and minority status who are most at risk, to press the issue in the face of emotional and economic dependence, coercive threat, and subcultural prescription of compliant roles for them (Mays & Cochran, 1988). Coercive sexual experiences erode womens' sense of efficacy to exercise personal control over risky sex practices (Heinrich, in press). Women who are enmeshed in relationships of imbalanced power need to be taught how to negotiate protected sex nonconfrontationally. Women who are well equipped with condoms run the risk of being viewed as promiscuous, which creates a further impediment to self-protective action.

At the broader societal level, attitudes and social norms must be altered to increase men's sense of responsibility for the social and health consequences of their sexuality. In societies where the virus is spread heterosexually through prostitution, economic conditions that thrust women into prostitution and drug dependencies that drive them to sell sex for drugs create major obstacles to preventive efforts. In short, if AIDS prevention programs are to achieve much success they must address the sociocultural realities that impose constraints on the exercise of self-protective measures.

In the case of high-risk sexual behavior, strong involvement in a social network supportive of self-protective practices, increases knowledge of risky behaviors, beliefs of efficacy, and adoption of safer sex practices (Fisher, 1988; McKusick, et al., 1990). Risk

reduction through alteration of subcommunity norms is an especially important vehicle for curbing the spread of AIDS among intravenous drug users. This is because drug use is often a socially shared activity. Restricted access to drug injection equipment and the legal problems of being caught with it promote risky shared use of drug paraphernalia. Shooting galleries involving widespread sharing of contaminated needles provide the most fertile ground for spreading the virus. Preventive efforts aimed at drug subcultures show that drug users are reachable and instructable in safer practices. Thus, provision of protective information by outreach workers about AIDS transmission, needle-exchange programs, and instruction on how to sterilize syringes can substantially reduce risky injection practices which can lower infection rates among those who continue the drug habit (Des Jarlais & Friedman, 1988a; Watters, et al., 1990). Needle and syringe-exchange programs do not propagate drug use, as some people have feared it might (Buning, 1991). Rather, exchange programs reduce needle sharing and curb the further spread of HIV infection among drug users. As Des Jarlais notes, most drug users now know about the modes of AIDS transmission, but many are still inadequately informed or misinformed about risk reduction techniques. For example, some dutifully wash needles in water or in other ways that do not kill the virus. Emerging subcommunity norms against needle-sharing behavior is a good predictor of reduction in risky injection practices among intravenous drug users (Des Jarlais & Friedman, 1988a). Although the subcommunity approach also serves as an excellent vehicle for enlisting drug users in treatment programs, there is not much that outreach workers can offer them because of the scarcity of treatment services.

Social influences rooted in indigenous sources generally have greater impact and sustaining power than those applied by outsiders for a limited time. A major benefit of community-mediated programs is that they can mobilize the power of formal and informal networks of influence for transmitting knowledge and cultivating beneficial patterns of behavior. A community-mediated approach is a potentially powerful vehicle for promoting both personal and social change in several ways. It provides an effective means for creating the motivational preconditions of change, for modeling requisite skills, for enlisting natural social incentives for adopting and maintaining beneficial habits, and for establishing protective practices as the normative standards of conduct. Generic principles of effective programs are readily adaptable at the subcommunity level to sociocultural differences in the populations being served. In the social diffusion of new behavior patterns, indigenous adopters usually serve as more influential exemplars and persuaders than do outsiders. Moreover, behavioral practices that create widespread health problems require group solutions that are best achieved through community-mediated efforts.

In their pioneering health-promoting programs, Farquhar and Maccoby have drawn heavily on existing community networks for transmitting knowledge and cultivating beneficial patterns of health behavior (Farquhar, Maccoby, & Solomon, 1984). This work provides a model of how to mobilize community resources to disseminate health information and to convey explicit guides on how to change refractory health habits. A socially-oriented program of personal change should be applied in ways designed to create self-sustaining structures within the community for promoting behavioral practices conducive to health. Persons in the community, who serve as local organizers, are taught how to design, coordinate, and implement the programs. By teaching communities how to take charge of their own change, self-directedness is fostered at the community level as well as at the personal level.

The substantial reductions in high-risk sexual practices by gay subgroups was achieved largely through effective self-empowering organization (McKusick, et al., 1990; Stall & Paul,

1989). For example, in the unprecedented social and behavioral changes brought about by the gay community in San Francisco, the members educated themselves, made safer sex practices the social norm, devised and implemented their own instructional programs to prevent HIV transmission, established mechanisms for diffusing this knowledge, issued regular updates on new research findings and available treatments, created social support systems to counteract despair and encourage meaningful life pursuits in those suffering from opportunistic infections, and actively fostered lifestyle changes that might enhance immune function to prolong the lives of those infected with the virus but not yet experiencing any symptoms. There have been some attempts at self-mobilization by drug-user subgroups for self-protective change, but these have been less successful (Friedman, de Jong, & Des Jarlais, 1988). Lack of educational and financial resources, illegalities surrounding drug activities, societal restrictions of the means for safer injection practices, mistrusts, and the large amount of time devoted to supporting the drug habit impede efforts at self-organization. These conditions create a greater need for external aid in subgroup organization for risk reduction in intravenous drug users.

Prevention of Behavioral Lapses

It is not unusual for some individuals to lapse into risky practices after having adopted safer ones. A minority revert either occasionally or completely to risky drug injection behavior or unprotected sexual behavior (Des Jarlais, Abdul-Quader, & Tross, 1991; Stall, Ekstrand, Pollack, McKusick, & Coates, 1990). Development of interventions for behavioral lapses is best advanced by interactional analyses of high-risk episodes rather than by search for correlates in demographic characteristics and measures of traits disembodied from the types of situational and social influences that can override self-regulatory efforts. For example, younger individuals are more likely to engage in high-risk behavior than are their older counterparts. Such a finding is neither particularly informative nor provides any guidelines on how to maintain safer practices in problematic situations. Where each behavioral lapse carries high risk because of the relatively high prevalence of HIV infection among one's associates, individuals cannot wait for aging to protect them. While on average, younger individuals are less precautionary than older ones, the differences within groups are usually much larger than the differences between groups. Progress in understanding human behavior and change is better achieved by clarifying the determinants of human behavior and the mechanisms through which they operate than by casting people into categories or subcategories. The research approach that is most informative and functional elucidates the high-risk episodes that arise recurrently and the modes of coping strategies that prove successful and those that are ineffectual in the interpersonal transactions.

In a retrospective analysis of high-risk episodes experienced by gay men, Kelley and his associates document the transactions that spawn lapses into behaviors that carry high risk of infection (Kelly, Kalichman, et al., 1991). In these episodes, the individuals were unable to resist unsafe sex because of their partners' coercive pressures, misgivings and embarrassments over negotiating condom use, strong attraction and desire to please the partner, being caught up in a highly arousing intimacy without a condom, belief that condom use would reduce pleasurable sensations, revivifying pleasurable aspects of risky sex, being intoxicated, high on drugs, depressed, lonely or distressed at the time, and conceding inefficacy to change risky practices. Those who were successful in protecting themselves against sexually transmitted infection used a variety of cognitive and behavior self-regulatory techniques to do so. They reaffirmed their personal efficacy to practice safer sex and informed their partners to that effect, they planned

beforehand what they were willing to do and ensured they had condoms available, conjured up the positive outcomes of good health and the devastating consequences of AIDS, curtailed alcohol and drugs before sex and they guided the sexual activity toward the safer forms.

In managing refractory habits, effective self-regulators usually master a variety of strategies for managing risky situations and apply the strategies persistently and consistently (Bandura, 1986; Perri, 1985). A successful program of lapse prevention must equip people with cognitive and behavioral skills that enable them to exercise control over high-risk situations. Part of effective self-management is concerned with how to avoid hazardous situations that are avoidable and how to extricate oneself quickly should one venture into them. In addition to efforts aimed at lapse prevention for those who have altered their practices, there are always newcomers who need knowledge and skills on how to manage risky situations. Hence, prevention of HIV infections requires ongoing psychosocial programs that promote continuing adherence to self-protective behavior rather than a onetime campaign. Such programs need to create enduring social supports for safer practices at the level of both community norms and personal networks.

Marlatt and Gordon (1985) provide a conceptual model of the relapse process for addictive behaviors in which self-regulatory efficacy operates as an influential factor. The common precipitants in failures in self-regulation include: inability to manage negative emotional states such as stress, depression, loneliness, boredom and restlessness; social pressures to use the substance; and interpersonal conflict. The conditions that have been identified as relapse precipitants, indeed, undermine perceived self-regulatory efficacy regarding drug use (Sitharthan, McGrath, Cairns, & Saunders, 1991). Heroin users with a low sense of efficacy cannot resist pressures to use opiates even if ill or to refrain from sharing needles that involve high risk of infection. Perceived self-efficacy predicts regular use of clean needles both directly and by intentions to do so (Kok, et al., 1991). Neither attitudes toward drug use nor social norms contributed to safer injection practices.

Some researchers have added situational precipitants that include the settings of drug use and other reminders of the effects of previous drug use (Heather & Stallard, 1989). Situational reminders activate positive outcome expectancies of the pleasurable effects of drugs experienced in the past. Such expectations create motivators for drug use that tax self-regulatory capabilities. In addition, exposure to situations in which one formerly exercised poor control over substance use can activate thoughts of past failures that weaken beliefs in one's current self-regulative efficacy (Cooney, Gillespie, Baker, & Kaplan, 1987).

Perceived self-efficacy also plays an influential role in treatment outcomes for drug addiction. The stronger the perceived self-regulative efficacy instilled by treatment the more successful are opiate users in staying off drugs (Gossop, Green, Phillips, & Bradley, 1990). Gossop and his colleagues examined a variety of predictors of drug status at short and at long follow-up periods. The two factors that consistently emerged as significant predictors of outcome were perceived self-efficacy to refrain from drug use and protective factors in the form of supportive associates and involvement in purposeful occupational activities that contribute to a satisfying early life which help them remain drug free. Number of coping strategies predicted short-term drug status but was unrelated to long-term status. Perceived self-efficacy accounts for variation in follow-up drug status after multiple statistical controls are applied for the effects of protective factors, time in treatment, previous history of abstinence and coping strategies. After completing inpatient detoxification programs, individuals are often urged to seek aftercare treatment in the community for their drug problem. Perceived self-efficacy to do what is

necessary to gain entry into an aftercare program predicts whether or not they enter aftercare treatment (Heller & Krauss, 1991).

Viewed from the model of triadic reciprocal causation, efforts at relapse prevention need to be extended beyond personal changes to the social environment as well. Those who have become deeply enmeshed in a subculture of substance abuse have to restructure their way of life if they are to conquer their addiction. Extending the relapse prevention model to environmental change does not minimize personal efficacy but rather factors in its influential role in shaping the very environments people experience. The environment is not simply a fixed entity that inevitably impinges upon individuals. People select, construct and negotiate environments partly on the basis of their self-beliefs of efficacy.

One way in which severely addicted individuals restructure their lives is by staying away from detrimental social environments that are avoidable and selecting beneficial environments that promote alternative desired lifestyles (McAuliffe, Albert, Cordill-London, & McGarraghy, 1991). To the extent that they are equipped to manage inducements to use drugs in risky situations that are unavoidable, by their success in self-regulation they create a different environment for themselves than if they revert to drug-related routines. It is one thing to get into beneficial environments, but another to experience success in them. To achieve lasting changes, individuals have to develop the competencies needed to gain acceptance and satisfaction in their new lifestyle. Treatments that address these diverse facets of life produce more enduring recoveries from addiction (McAuliffe, et al., 1991).

Attitudinal Impediments to Development of Psychosocial Models

Despite the considerable benefits of preventive measures, psychosocial research receives only a paltry 2 percent of the AIDS research budget (Siegel, Graham, & Stoto, 1990). There exist several attitudes that downgrade the priority for research into psychosocial determinants and mechanisms governing AIDS-related behavior and for further development of preventive programs for this deadly epidemic. One view, that is voiced recurrently, trivializes psychosocial approaches by regarding them as merely stopgap measures until a vaccine is discovered. This type of attitude reflects how disappointingly little has been learned from past experiences with behaviorally transmitted diseases.

The development of a generic preventive vaccine presents daunting challenges. The AIDS virus appears in differing subtypes and mutates rapidly, thus requiring new vaccines for changing viral strains. It invades immune cells and not only evades destruction by the body's defense system but turns infected T-helper cells into producers of more viruses and eventually destroys the very cells that provide protective immunity. It remains latent for long periods, and it may become more virulent over time. Considering these baffling biological properties, the quest for a vaccine that will provide protective immunity against the changing forms of this virus is likely to be a prolonged, frustrating one. Because viruses merge into the host cells, the task of developing antiviral treatments that can kill the AIDS virus without destroying the host immune cells is a formidable one.

Even the more limited goal of slowing the progress of the disease or keeping it in check with antiviral drugs presents major problems of compliance with drug regimens because they produce toxicities creating severe side effects. Drugs that retard reproduction of the virus but do not eradicate it must be taken continually. Thus, in animals engrafted with human immune organs who have been infected with the HIV virus, the antiviral drug AZT reduces the virus to a

very low level but when the drug is withdrawn the infection flares (McCune, Namikawa, Shih, Rabin, & Kaneshima, 1990). Prolonged use of drugs that are beneficial in the short term by attacking nonresistant viral strains can give rise to new resistant strains and to serious physical damage that requires discontinuation of the drug. The virus usually develops resistance to given drugs or mutates in ways that outwit the drugs.

Sexually transmitted diseases, such as gonorrhea and syphilis, that have been with us for ages have thwarted vaccine development. Discovery of effective treatments lowers the prevalence rates of a disease but does not eradicate it. With the development of a simple treatment for venereal disease support for psychosocial control programs was curtailed with a resultant rise in infection rates (Cutler & Arnold, 1988). The history of efforts to control diseases transmitted by behavior underscores the need for a multifaceted approach combining medical treatments with continuing psychosocial preventive programs. Contrary to the commonly voiced view, it is not that psychosocial preventive programs are of value because they provide the only means available to stem the spread of AIDS in the absence of vaccines or effective treatments. Rather, psychosocial programs constitute an integral part of a multifaceted public health strategy not only before, but even after effective treatments are found. The lessons from the past concerning behaviorally transmitted diseases should not be lost on the AIDS problem. Whether our advanced biotechnology will triumph over the AIDS virus, or the mutable virus will foil our biotechnology remains to be seen. Whatever the outcome may be, AIDS will remain with us as a continuing problem requiring ongoing psychosocial preventive programs.

Another downgrading view rests on the misbelief that psychosocial influences cannot effect much change in the transmissive risky behaviors because they serve potent drives. Amenability of behavior to change differs considerably depending on whether one seeks to eliminate certain kinds of gratifications or to alter the means of gaining those gratifications. It is much more difficult to get people to relinquish behavior that is powerfully reinforced than to adopt safer forms of the behavior that serve the same function. In the case of AIDS prevention, people who are not about to give up drugs or their preferred forms of sexuality can achieve substantial protection against HIV infection by substituting safer behaviors for risky ones. Multifaceted psychosocial programs that equip people with protective knowledge, with the means and self-beliefs to exercise effective personal control, and provide social supports for their efforts at personal change can achieve highly beneficial results. Indeed, prevention programs that incorporate many of these elements have produced substantial reductions in risky sexual and drug-injection behaviors.

Immunologic Effects of Coping Efficacy

The discussion thus far has been concerned mainly with how social and self-regulative efficacy contribute to self-protective behavior. A psychosocial theory for the prevention and management of AIDS must address biological mechanisms as well as health-related behaviors. In accord with the biopsychosocial model of health and illness (Engel, 1977), psychosocial factors not only exercise control over behaviors that enhance or impair health, they also activate a wide range of biological processes that can affect susceptibility to infection. Infectious and chronic diseases are usually the product of interacting sets of determinants. The HIV virus operates in conjunction with other factors to produce the clinical manifestation of AIDS. Therefore, there is variability in whether exposure to the HIV virus will result in infection. That some people are better able than others to fight off local invasion by the virus is indicated by

instances of individuals who have an ongoing sexual relationship with an infected partner but do not become infected. There is also considerable variability in the length of time before the latently infected individuals begin to develop clinical symptoms. Additionally, there is variability in the rate with which the disease progresses to the final stage of opportunistic infections and cancers as the ability of the immune system to fight infectious agents is severely impaired.

Physical cofactors account for some of the variability in immunological control of the latent virus and rate of disease development. However, it should be noted that many of these physical cofactors that increase vulnerability to infection and disease progression, such as drug abuse, untreated venereal diseases that produce genital ulceration, and other activities that weaken health status, are largely the products of psychosocially-determined behavior patterns. Not only do psychosocial influences breed many of the physical cofactors, but coping efficacy may operate as a psychosocial cofactor that influences infectability and disease progression directly through its impact on immune function. The heavy focus on the inevitability of disease development given HIV infection has retarded research on cofactors that operate as contributors to the clinical manifestations of AIDS. Such knowledge identifies cofactors over which people can exercise some control and those that are not amenable to personal change.

Perceived coping self-efficacy can affect immune function through stress and depression. Perceived self-efficacy to exercise control over stressors plays a central role in human stress reactions (Bandura, 1988a). Exposure to stressors with ability to control them has no adverse biological effects. But exposure to the same stressors without the ability to control them activates autonomic reactions, catecholamine secretion and release of endogenous opioids (Bandura, Cioffi, Taylor, & Brouillard, 1988; Bandura, Taylor, Williams, Mefford, & Barchas, 1985; Maier, et al., 1985; Shavit & Martin, 1987).

Biological systems are highly interdependent. The types of biological systems activated by a weak sense of coping efficacy are intricately involved in the regulation of the immune system. Indeed, a growing body of evidence shows that exposure to stressors with weak ability to exercise control over them impairs various facets of immune function (Jemmott & Locke, 1984; Kiecolt-Glaser, & Glaser, 1987; Maier, et al., 1985; Shavit & Martin, 1987).

Although the stress of coping inefficacy is immunosuppressive, there is suggestive evidence that providing people with the means for managing stress may be immunoenhancing, at least for some immunologic functions (Kiecolt-Glaser, et al., 1986; Kiecolt-Glaser, et al., 1985). Moreover, stress aroused while gaining coping mastery over acute stressors enhances different components of the immune system (Wiedenfled, O'Leary, Bandura, Brown, Levine, & Raska, 1990). Several studies report findings that bear on the issue of whether psychosocial interventions may help to retard disease progression. Development of skills to manage stress has been shown to increase immune function in metastatic cancer patients (Gruber, Hall, Hersh, & Dubois, 1988), and to enhance cellular and humoral immune functioning in seropositive gay men in asymptomatic stages of HIV infection (Antoni, et al., 1990). The immune system includes multiple interacting subprocesses with intricate interconnections to other biological systems, all of which complicates evaluation of level of immunity. Whether the magnitude of the immunologic changes achieved in these studies is sufficient to have significant health consequences remains to be determined.

Another path of influence of coping inefficacy on immunocompetence is through the mediating effects of depression. A sense of personal inefficacy to fulfill desired goals that affect evaluation of self-worth and to secure things that bring satisfaction to one's life create depression

(Bandura, 1988b; Kanfer & Zeiss, 1983). When the perceived self-efficacy involves social relationships, it can induce depression both directly and indirectly by curtailing the cultivation of the very interpersonal relationships that can provide satisfactions and buffer the effects of chronic daily stressors (Holahan & Holahan, 1987a,b). Depression has been shown to reduce immune function and to heighten susceptibility to disease (Ader & Cohen, 1985). The more severe the depression, the greater the reduction in immunity (Irwin, 1988).

The evidence regarding immunoregulatory interactions, suggests that a severe sense of coping inefficacy may further impair the already damaged immune system of persons infected with the HIV virus and thus exacerbate the disorder (Kiecolt-Glaser & Glaser, 1988). Apart from the common environmental stressors with which people must cope, knowledge that one has contracted the AIDS virus, the accompanying stigmatization and major social repercussions, and the reality of progressive physical deterioration and anticipated death create new major sources of stress and despondency. Ineffectual cognitive and behavioral coping with knowledge of seropositivity and with AIDS-related problems further heightens stress and depression (Namir, Wolcott, Fawzy, & Alumbaugh, 1987).

Reactions to knowledge of seropositivity have undergone significant changes over the course of the AIDS epidemic. The early reactions of despair to the epidemic were supplanted by active pursuit of information, preventive programs, treatments, and lifestyle changes that might offer any hope of forestalling the onset of AIDS or prolonging the life of those in the symptomatic stage. These concerted psychosocial efforts curtailed the spread of HIV infection in gay populations. Significant progress is being made in treating the opportunistic infections that arise when immune systems are weakened by the virus. But the quest for drugs that would destroy the HIV virus or render AIDS a manageable disease is strewn with dashed hopes. As the AIDS epidemic continues to take its heavy human and emotional toll, collective enabling efforts are being replaced in many circles by a sense of despondency. The magnitude of the problem calls for increased commitment of resources to the crucial aspect of the pandemic over which we can command some control -- stemming the spread of HIV infections through comprehensive preventive programs.

A multifaceted approach must address the burdensome affective dimensions of AIDS as well. Research conducted within the social cognitive framework has led to the development of self-management programs for alleviating stress and depression (Bandura, 1988b; Beck, 1976; Lewinsohn, Antonuccio, Steinmetz, & Teri, 1984; Lewinsohn & Clarke, 1984; Rehm, 1981; Taylor & Arnow, 1988). These psychosocial approaches equip people with coping skills to manage difficult problems and to reduce their level of emotional distress. Those who do not know how to exercise control over emotional strain can be easily overwhelmed by daily confrontations with innumerable social stressors, progressive physical debilitation, bereavement experiences, and preoccupation with thoughts of their own death. Such severe chronic stressors adversely affect immunity (Kiecolt-Glaser & Glaser, 1988). The exercise of cognitive control over self-debilitating thought processes can further reduce the psychological toll of AIDS and enable patients to live out their lives as productively as they possibly can. The impact of AIDS on psychosocial functioning is, therefore, partly mediated by personal coping capabilities. Thus, some individuals who know they are infected but are still asymptomatic may sink into deep despondency, whereas others with an array of symptoms may struggle valiantly to continue a meaningful and productive life.

The conceptual model and supporting evidence reviewed in this chapter argue strongly for a multifaceted approach to the prevention and management of AIDS in which psychosocial

interventions must play an influential role. With regard to prevention, equipping people with the cognitive and behavioral coping resources to exercise personal control over risky behaviors enables them to protect themselves from exposure to this most deadly of viruses. By their impact on stress, depression and immunity, psychosocial factors can affect disease development and quality of adaptation to it. Neglect or downgrading of psychosocial models and programs will exact heavy personal tolls and impose mounting financial and social burdens on societies.