Health Promotion by Social Cognitive Means

Albert Bandura, PhD

This article examines health promotion and disease prevention from the perspective of social cognitive theory. This theory posits a multifaceted causal structure in which self-efficacy beliefs operate together with goals, outcome expectations, and perceived environmental impediments and facilitators in the regulation of human motivation, behavior, and well-being. Belief in one's efficacy to exercise control is a common pathway through which psychosocial influences affect health functioning. This core belief affects each of the basic processes of personal change—whether people even consider changing their health habits, whether they mobilize the motivation and perseverance needed to succeed should they do so, their ability to recover from setbacks and relapses, and how well they maintain the habit changes they have achieved. Human health is a social matter, not just an individual one. A comprehensive approach to health promotion also requires changing the practices of social systems that have widespread effects on human health.

Keywords: *social cognitive theory; self-efficacy; self-regulation; collective efficacy; self-management model*

I am deeply honored to be a recipient of the Healthtrac Award. It is a special honor to be recognized by a foundation that promotes the betterment of human health in the ways I value highly. In comparing myself to the figure Larry so generously described, I feel like a Swiss yodeler following Pavarotti.

The field of health is changing from a disease model to a health model. It is just as meaningful to speak of levels of vitality and healthfulness as of degrees of impairment and debility. Health promotion should begin with goals, not means.[1] If health is the goal, biomedical interventions are not the only means to it. A broadened perspective expands the range of health-promoting practices and enlists the collective efforts of researchers and practioners who have much to contribute from a variety of disciplines to the health of a nation.

The quality of health is heavily influenced by lifestyle habits. This enables people to exercise some measure of control over their health. By managing their health habits, people can live longer and healthier and retard the process of aging. Self-management is good medicine. If the huge health benefits of these few habits were put into a pill, it would be declared a scientific milestone in the field of medicine.

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Supply-Side Versus Demand-Side Approaches

Current health practices focus heavily on the medical supply side. The growing pressure on health systems is to reduce, ration, and delay health services to contain health costs. The days for the supply-side health system are limited. People are living longer. This creates more time for minor dysfunctions to develop into chronic diseases. Demand is overwhelming supply. Psychosocial factors partly determine whether the extended life is lived efficaciously or with debility, pain, and dependence.[2,3]

Social cognitive approaches focus on the demand side. They promote effective self-management of health habits that keep people healthy through their life span. Aging populations will force societies to redirect their efforts from supply-side practices to demand-side remedies. Otherwise, nations will be swamped with staggering health costs that consume valuable resources needed for national programs.

SOCIAL COGNITIVE THEORY

This article focuses on health promotion and disease prevention by social cognitive means.[4,5] Social cognitive theory specifies a core set of determinants, the mechanism through which they work, and the optimal ways of translating this knowledge into effective health practices. The core determinants include *knowledge* of health risks and benefits of different health practices, *perceived self-efficacy* that one can exercise control over one's health habits, *outcome expectations* about the expected costs and benefits for different health habits, the health *goals* people set for themselves and the concrete plans and strategies for realizing them, and the *perceived facilitators* and social and structural *impediments* to the changes they seek.

Knowledge of health risks and benefits creates the precondition for change. If people lack knowledge about how their lifestyle habits affect their health, they have little reason to put themselves through the travail of changing the detrimental habits they enjoy. But additional self-influences are needed for most people to overcome the impediments to adopting new lifestyle habits and maintaining them. Beliefs of personal efficacy play a central role in personal change. This focal belief is the foundation of human motivation and action. Unless people believe they can produce desired effects by their actions, they have little incentive to act or to persevere in the face of difficulties. Whatever other factors may serve as guides and motivators, they are rooted in the core belief that one has the power to produce desired changes by one's actions.

Health behavior is also affected by the outcomes people expect their actions to produce. The outcome expectations take several forms. The physical outcomes include the pleasurable and aversive effects of the behavior and the accompanying material losses and benefits. Behavior is also partly regulated by the social reactions it evokes. The social approval and disapproval the behavior produces in one's interpersonal relationships is the second major class of outcomes. This third set of outcomes concerns the positive and negative self-evaluative reactions to one's health behavior and health status. People adopt personal standards and regulate their behavior by their self-evaluative reactions. They do things that give them self-satisfaction and self-worth and refrain from behaving in ways that breed self-dissatisfaction. Motivation is enhanced by helping people to see how habit changes are in their self-interest and the broader goals they value highly. Personal goals, rooted in a value system, provide further self-incentives and guides for health habits. Long-term goals set the course of personal change. But there are too many competing

influences at hand for distal goals to control current behavior. Short-term attainable goals help people to succeed by enlisting effort and guiding action in the here and how.

Personal change would be easy if there were no impediments to surmount. The perceived facilitators and obstacles are another determinant of health habits. Some of the impediments are personal ones that deter performance of healthful behavior. They form an integral part of self-efficacy assessment. Self-efficacy beliefs must be measured against gradations of challenges to successful performance. For example, in assessing personal efficacy to stick to an exercise routine, people judge their efficacy to get themselves to exercise regularly in the face of different obstacles: when they are under pressure from work, are tired, feel depressed, are anxious, face foul weather, and have more interesting things to do. If there are no impediments to surmount, the behavior can be easy to perform and everyone is efficacious.

The regulation of behavior is not solely a personal matter. Some of the impediments to healthful living reside in health systems rather than in personal or situational impediments. These impediments are rooted in how health services are structured socially and economically.

Primacy of Efficacy Belief in Causal Structures

Self-efficacy is a focal determinant because it affects health behavior both directly and by its influence on the other determinants. Efficacy beliefs influence goals and aspirations. The stronger the perceived self-efficacy, the higher the goals people set for themselves and the firmer their commitment to them. Self-efficacy beliefs shape the outcomes people expect their efforts to produce. Those of high efficacy expect to realize favorable outcomes. Those of low efficacy expect their efforts to bring poor outcomes. Self-efficacy beliefs also determine how obstacles and impediments are viewed. People of low efficacy are easily convinced of the futility of effort in the face of difficulties. They quickly give up trying. Those of high efficacy view impediments as surmountable by improvement of self-management skills and perseverant effort. They stay the course in the face of difficulties.

Figure 1 shows the paths of influence in the posited sociocognitive causal model. Beliefs of personal efficacy affect health behavior both directly and by their impact on goals, outcome expectations, and perceived facilitators and impediments.

Overlap in Health Belief Models

There are many psychosocial models of health behavior. They are founded on the common metatheory that psychosocial factors are heavy contributors to human health. For the most part, the models include overlapping determinants but under different names. In addition, facets of a higher order construct are often split into seemingly different determinants, as when different forms of anticipated outcomes of behavioral change are included as different constructs under the name of attitudes, normative influences, and outcome expectations. Following the timeless dictum that the more the better, some researchers overload their studies with a host of factors that contribute only trivially to health habits because of redundancy. Figure 2 shows the factors the various health models select and their overlap with determinants in social cognitive theory.

Most of the factors in the different models are mainly different types of outcome expectations. Perceived severity and susceptibility to disease in the health-belief model are the expected negative physical outcomes. The perceived benefits are the positive out-

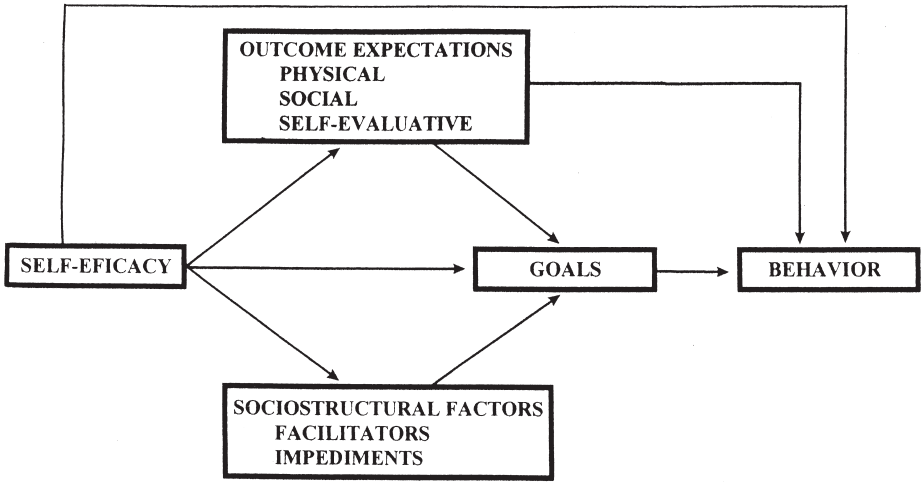

Figure 1. Structural paths of influence wherein perceived self-efficacy affects health habits both directly and through its impact on goals, outcome expectations, and perception of sociostructural facilitators and impediments to health-promoting behavior.

come expectations. In the theory of reasoned action and planned behavior, attitudes toward the behavior and social norms produce intentions that are said to determine behavior. Attitude is measured by perceived outcomes and the value placed on those outcomes. As defined and operationalized, these are outcome expectations, not attitudes as traditionally conceptualized. Norms are measured by perceived social pressures and one's motivation to comply with them. Norms correspond to expected social outcomes for a given behavior. Goals may be distal ones or proximal ones. Intentions are essentially proximal goals. I aim to do *x* and I intend to do *x* are really the same thing. Perceived control in the theory of planned behavior overlaps with perceived self-efficacy. Regression analyses reveal substantial redundancy of predictors bearing different names.[6] For example, after the contributions of perceived self-efficacy and self-evaluative reactions to one's health behavior are taken into account, neither intentions nor perceived behavioral control add any incremental predictiveness.

Most of the models of health behavior are concerned only with predicting health habits. But they do not tell you how to change health behavior. Social cognitive theory offers both predictors and principles on how to inform, enable, guide, and motivate people to adapt habits that promote health and reduce those that impair it.[4]

Threefold Stepwise Implementation Model

The social utility of health promotion programs can be enhanced by a stepwise implementation model. In this approach, the level and type of interactive guidance is tailored to people's self-management capabilities and motivational preparedness to achieve desired changes. The first level includes people with a high sense of efficacy and positive outcome expectations for behavior change. They can succeed with minimal guidance to accomplish the changes they seek.

THEORIES	PSYCHOSOCIAL DETERMINANTS OF HEALTH BEHAVIOR							
	SELF-EFFICACY	OUTCOME EXPECTATIONS			GOALS		IMPEDIMENTS	
		Physical	Social	Self-Evaluative	Proximal	Distal	Personal & Situational	Health System
Social Cognitive Theory	✔	✔	✔	✔	✔	✔	✔	✔
Health Belief Model		✔	✔				✔	✔
Theory of Reasoned Action		✔	✔		✔			
Theory of Planned Behavior	✔	✔	✔		✔			
Protection Motivation Theory	✔	✔						

Figure 2. Summary of the main sociocognitive determinants and their areas of overlap in different conceptual models of health behavior.

Individuals at the second level have self-doubts about their efficacy and the likely benefits of their efforts. They make halfhearted efforts to change and are quick to give up when they run into difficulties. They need additional support and guidance by interactive means to see them through tough times. Much of the guidance can be provided through tailored print or telephone consultation.

Individuals at the third level believe that their health habits are beyond their personal control. They need a great deal of personal guidance in a structured mastery program. Progressive successes build belief in their ability to exercise control and bolster their staying power in the face of difficulties and setbacks. Thus, in the stepwise model, the form and level of enabling interactivity is tailored to the participants' changeability readiness. The following sections are devoted to a more detailed consideration of how to enable people at these various levels of changeability to improve their health status and functioning.

PUBLIC HEALTH CAMPAIGNS

Societal efforts to get people to adopt healthful practices rely heavily on public health campaigns. These population-based approaches promote changes mainly in people with high perceived efficacy for self-management and positive expectations that the prescribed changes will improve their health. Meyerowitz and Chaiken[7] examined four possible mechanisms through which health communications could alter health habits: by transmitting information on how habits affect health, by arousing fear of disease, by increasing perceptions of one's personal vulnerability or risk, or by raising people's beliefs in their efficacy to alter their habits. They found that health communications foster adoption of healthful practices to the extent that they raise beliefs in personal efficacy.

To help people reduce health-impairing habits by health communications requires a change in emphasis from trying to scare people into health to enabling them with the self-management skills and self-beliefs needed to take charge of their health habits.

In longitudinal analyses of community-based health campaigns, Rimal[8,9] found that perceived self-efficacy governs whether individuals translate perceived risk into a search for health information and whether they translate acquired health knowledge into healthful behavioral practices. Those of low self-efficacy take no action even though they are knowledgeable about lifestyle contributors to health and perceive themselves to be vulnerable to disease. Maibach and colleagues[10] found that both people's preexisting self-efficacy beliefs that they can exercise control over their health habits and the self-efficacy beliefs instilled by a community health campaign contributed to adoption of healthy eating habits and regular exercise (Figure 3).

Overprediction of Refractoriness

Our theories overpredict the resistance of health habits to change. This is because they are developed by studying mainly refractory cases but ignoring successful self-changers. For example, smoking is one of the most addictive substances. It is said to be intractable because it is compelled by biochemical and psychological dependencies. Each puff sends a reinforcing nicotine shot to the brain. Prolonged use is said to create a relapsing brain disease.

The problem with this theorizing is that it predicts far more than has ever been observed. More than 40 million people in the United States have quit smoking on their own. Where was their brain disease? How did the smokers cure the disease on their own?

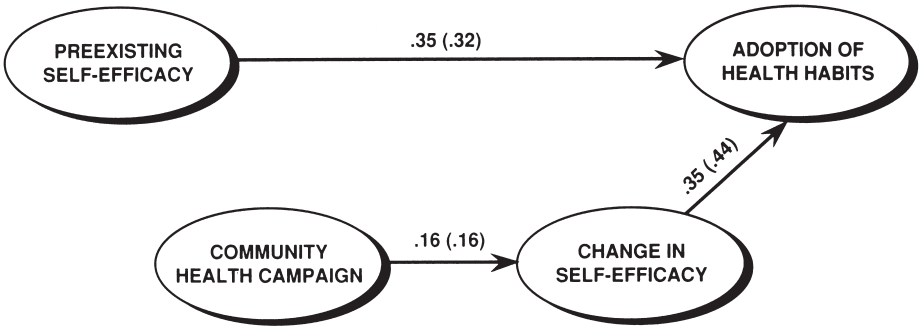

Figure 3. Paths of the influence of perceived self-efficacy on health habits in community-wide programs to reduce risk of cardiovascular disease.

NOTE: The initial numbers on the paths of influence are the significant path coefficients for adoption of healthy eating patterns; the numbers in parentheses are the path coefficients for regular exercise.[10]

Superimposed on the 40 million self-quitters, the dismal relapse curves that populate our journals are but a tiny ripple in the vast sea of successes. Carey and his colleagues verified longitudinally that heavy smokers who quit on their own had a stronger belief in their efficacy at the outset than did continuous smokers and relapsers.[11] Successful self-changers combine efficacy belief with outcome expectations that benefits will outweigh disadvantages of the lifestyle changes.

The same is true for alcohol and narcotic addiction. Lee Robins[12] reported a remarkably high remission for heroin addiction among Vietnam veterans without the benefit of treatment. Vaillant[13] has shown that a large share of alcoholics eventually quit drinking without treatment, assistance from self-help groups, or radical environmental change. Granfield and Cloud[14] put it well when they characterized the inattention to successful self-changes in substance abuse as "*the elephant that no one sees*."

Enhancement of Health Impact by Interactive Technologies

The absence of individual guidance places limits on the power of one-way mass communication. The revolutionary advances in interactive technology can increase the scope and impact of health promotion programs. On the *input side*, health communications can now be personally tailored to factors known to affect health behavior. Tailoring communications does not necessarily guarantee better outcomes. The benefits of individualization will depend on the predictive value of the tailored factors. If weak or irrelevant factors are targeted, individualization will not provide incremental benefits. Development of measures for key social cognitive determinants known to affect health behavior can provide guidance for tailoring strategies.

On the *behavioral adaption side*, individualized interactivity further enhances the impact of health promotion programs. Social support and guidance during early periods of personal change and maintenance increase long-term success. Here, too, the impact of social support will depend on its nature. Converging evidence across diverse spheres of functioning reveals that the social support has beneficial effects only if it raises people's beliefs in their efficacy to manage their life circumstances.[15] If social support is provided in ways that foster dependence, it can undermine coping efficacy. Effective enablers pro-

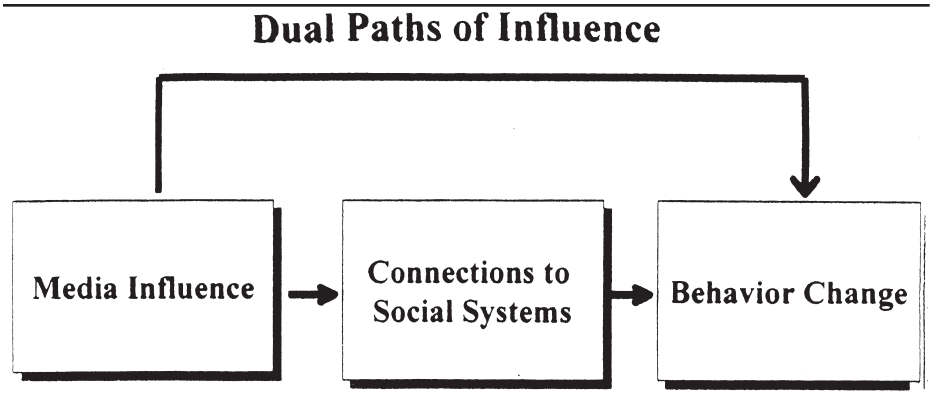

Figure 4. Paths of influences through which mass communications affect psychosocial changes both directly and via a socially mediated pathway by linking viewers to social networks and community settings.

vide the type of support and guidance that is conducive to self-efficacy enhancement for personal success.[5]

Interactive computer-assisted feedback provides a convenient means for informing, enabling, motivating, and guiding people in their efforts to make lifestyle changes. The personalized feedback can be adjusted to participants' efficacy level, the unique impediments in their lives, and the progress they are making. The feedback may take a variety of forms, including individualized print communications, telephone counseling, and linkage to supportive social networks. I shall describe shortly a self-management system that encompasses these various enabling features.

Socially Mediated Pathways of Influence

There is another way in which the power of population-based approaches to health promotion can be strengthened. There is only so much that large-scale health campaigns can do on their own, regardless of whether they are tailored or generic. There are two pathways through which health communication can alter health habits (Figure 4).

In the *direct pathway*, media promote changes by informing, modeling, motivating, and guiding personal changes. In the *socially mediated pathway*, the media link participants to social networks and community settings. These places provide continued personalized guidance, natural incentives, and social supports for desired changes. The major share of behavioral changes is promoted within these social milieus.[16]

Psychosocial programs for health promotion will be increasingly implemented via interactive Internet-based systems. People at risk for health problems typically ignore preventive or remedial health services. For example, young women at risk of eating disorders resist seeking help. But they will use Internet-delivered guidance because it is readily accessible, convenient, and provides a feeling of anonymity. Studies by Taylor and colleagues[17] attest to its potential. Through interactive guidance, women reduced dissatisfaction with their weight and body shape, altered dysfunctional attitudes, and rid themselves of disordered eating behavior.

Interactive technologies are a tool, not a panacea. They cannot do much if individuals cannot motivate themselves to take advantage of what they have to offer. These systems need to be structured in ways that build motivational and self-management skills as well

as guide habit changes. Otherwise, those who need the guidance most will use this tool least.

Promoting Society-Wide Changes by Serial Dramas

The social-linking function via the media is illustrated in global applications of serial television dramas founded on social cognitive theory that address some of the most urgent global problems.[18] They include the soaring population growth and transmission of AIDS. Hundred of episodes in these long-running serials get people deeply involved in the lifestyle changes being modeled. The serials dramatize the everyday problems people struggle with, model solutions to them, and provide people with incentives and strategies for bettering their lives. The story lines model family planning, women's equality, environmental conservation, AIDS prevention, and a variety of life skills.

It is of limited value to motivate people to change if they are not provided with appropriate resources and environmental supports to realize those changes. The dramatizations, therefore, link people to community resources where they can receive a lot of continued supportive guidance. Worldwide applications in Africa, Asia, and Latin America are raising people's efficacy to exercise control over their family lives, enhancing the status of women, and fostering the adoption of contraceptive practices to lower the rates of childbearing.

A controlled study in Tanzania compared changes in family planning and contraception use in half the country that received a dramatic series with the rest of the country that did not.[19] Compared to the control region, more families in the broadcast area went to family planning clinics and adopted family planning and contraceptive methods (Figure 5). The dramatic series produced similar changes later, when they were broadcast in the former control region of the country.

Some of the story lines centered on safer sexual practices to prevent the spread of AIDS. Infection rates are high among long-distance truckers and prostitutes at truck stops. The dramatic productions focused on self-protective and risky sexual practices and modeled how to curb the spread of HIV infection. Compared with residents in the control region, those in the broadcast region increased belief in their personal risk of HIV infection through unprotected sexual practices, talked more about HIV infection, reduced the number of sexual partners, and increased condom use.[20,21] The greater the exposure to the modeled behavior, the stronger the effects on perceived efficacy to control family size and risky sexual practices.

SELF-MANAGEMENT MODEL

Health habits are not changed by an act of will. It requires motivational and self-regulatory skills. Self-management operates through a set of psychological subfunctions. People have to learn to monitor their health behavior and the circumstances under which it occurs, and how to use proximal goals to motivate themselves and guide their behavior. They also need to learn how to create incentives for themselves and to enlist social supports to sustain their efforts.

DeBusk and his colleagues[22] have developed a self-management model for health promotion and disease risk reduction founded on the self-regulatory mechanisms of social cognitive theory. This self-management model combines self-regulatory principles with computer-assisted implementation (Figure 6). It includes exercise programs to build car-

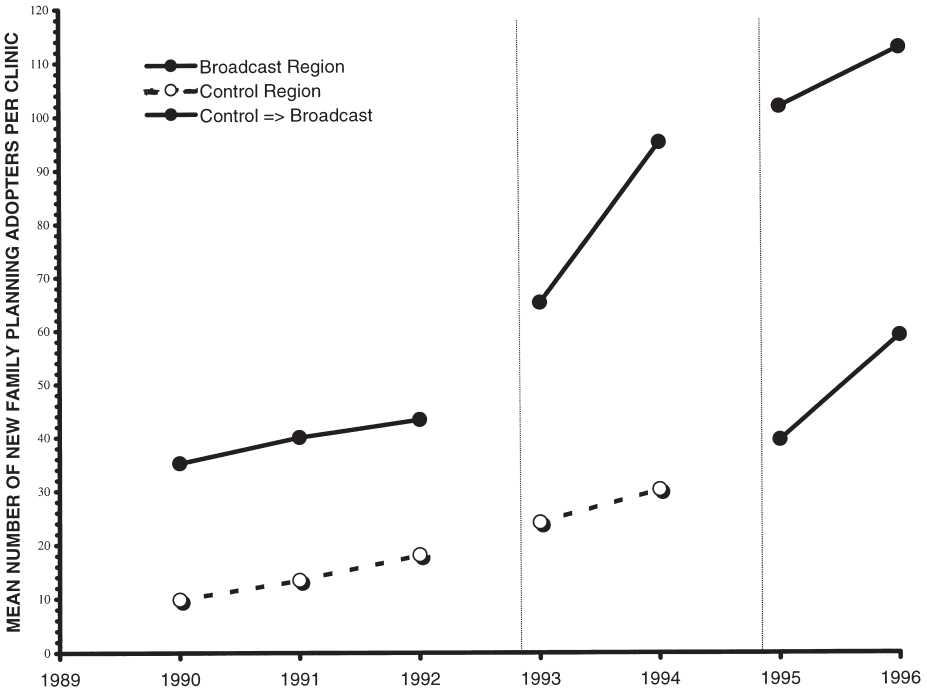

Figure 5. Mean number of new family planning adopters per clinic in the Ministry of Health Clinics in the broadcast region and those in the control region.

NOTE: The period 1990 to 1992 is the prebroadcast baseline. The values for 1993 to 1994 are the family planning adoption levels in the broadcast region (solid line) and the control region (dotted line). The values for 1995 to 1996 are the adoption levels when the serial was aired in the previous control region (solid line).[20]

diovascular capacity, nutrition programs to reduce dietary fat to lower risk of heart disease and cancer, weight reduction programs, and smoking cessation programs.

For each risk factor, people are provided detailed guides on how to improve their health functioning. They monitor their health habits, set themselves short-term goals, and report the changes they are making. The computer mails personalized reports that include feedback of progress toward subgoals. The feedback also provides guides on how to manage troublesome situations and new subgoals to realize. Efficacy ratings identify areas in which self-regulatory skills must be developed if beneficial changes are to be achieved and maintained. A single implementer, assisted with a computerized implementation system, provides intensive, individualized guidance in self-management to large numbers of people.

In tests of the preventive value of this self-management system, employees in the workplace lowered elevated cholesterol by altering eating habits high in saturated fats (Figure 7). They achieved even larger reductions if their spouses took part in the program. The more room for dietary change, the larger the reduction in plasma cholesterol. A single nutritionist implemented the entire program at minimal cost for large numbers of employees.

Nonadherence to drug therapies is a pervasive, serious problem. It worsens health conditions and raises medical costs. Moreover, it may lead physicians to prescribe stronger medications or more drastic interventions in response to the seeming failure of the pre-

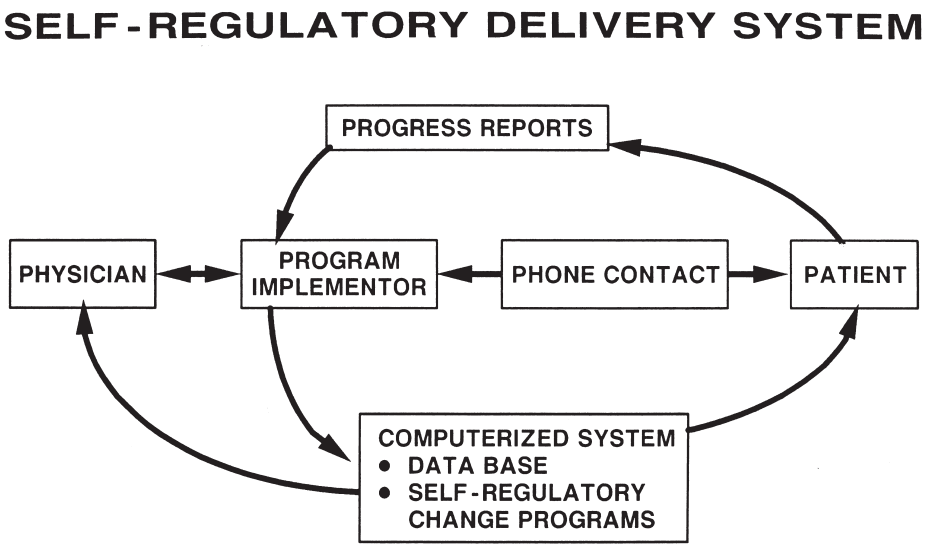

Figure 6. Computer-assisted self-regulatory system for altering health habits.

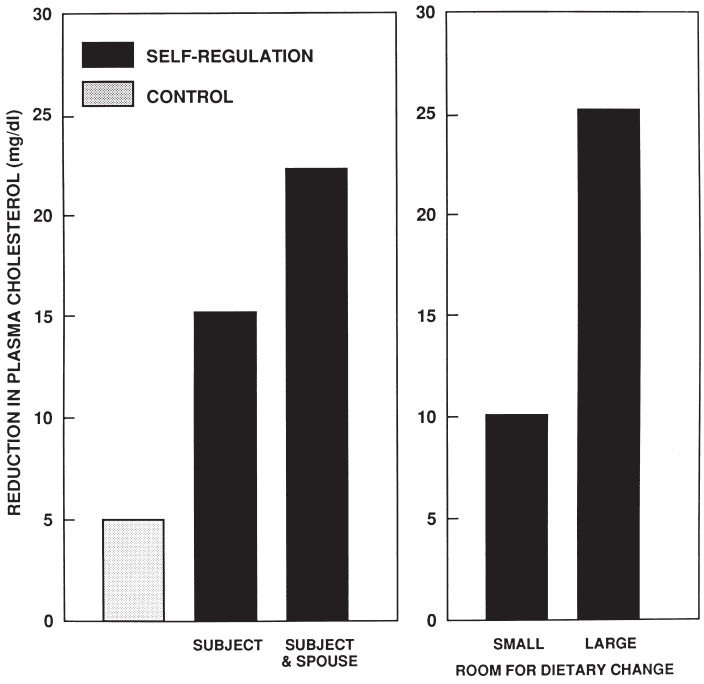

Figure 7. Levels of reduction in plasma cholesterol achieved with the self-regulation system. NOTE: The panel on the left summarizes the mean cholesterol reductions achieved in applications in the workplace by participants who used the self-management system either by themselves or along with their spouses, or did not receive the system to provide a control baseline. The right panel presents the mean cholesterol reductions achieved with the self-management system by participants whose daily cholesterol and fat intake was high or relatively low at the outset of the program.

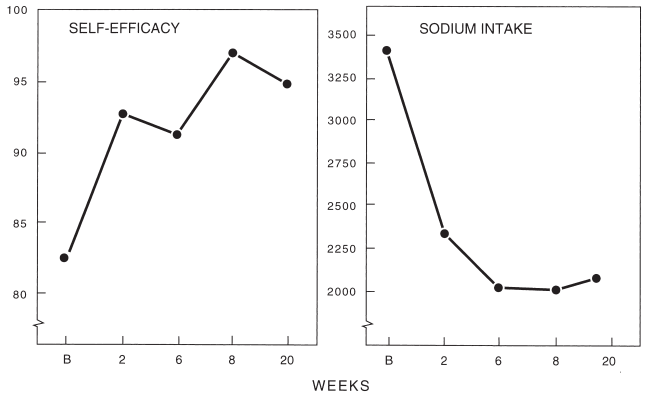

Figure 8. Enhancement of perceived self-regulatory efficacy and reduction of sodium intake through the aid of the self-management system.

scribed treatment. A major public health nightmare is that excessive use of drugs and erratic compliance will breed hardier strains of pathogens that render existing medications ineffective. The success of the self-management system in promoting adherence is shown in a program by West and his colleagues[23] to reduce sodium intake in patients suffering from heart failure (Figure 8). It strengthened patients' efficacy to adhere to a low-sodium diet. They achieved substantial reduction in sodium intake and maintained it during a 6-month period. At each time point, the higher the perceived self-efficacy, the greater the sodium reduction.

Haskell and his associates[24] used the self-management system to promote lifestyle changes in patients suffering from coronary artery disease. This places them at high risk of heart attacks. At the end of 4 years, those receiving medical care by their physicians showed no change or they got worse. In contrast, those aided in self-management by nurse implementers achieved big reductions in multiple risk factors: They lowered their intake of saturated fat, lost weight, lowered their bad cholesterol, raised their good cholesterol, exercised more, and increased their cardiovascular capacity (Figure 9).

The program also altered the physical progression of the disease. Those receiving the self-management program had 47% less buildup of plaque on their artery walls (Figure 10). They also had fewer coronary events, fewer hospitalizations, and fewer deaths.

The success of the self-management system has been compared in five hospitals to the standard medical postcoronary care in patients who have already suffered a heart attack. At the end of the 1st year, the self-management system is more effective in reducing risk factors and increasing cardiovascular functioning than the standard medical care.

The self-management system is well received because it is individually tailored to people's needs. It provides continuing personalized guidance that enables people to exercise control over their own change. It is a home-based program that does not require any special facilities, equipment, or group meetings plagued with high drop-out rates. It can serve large numbers of people simultaneously under the guidance of a single implementer. It is not constrained by time and place. It combines the high individualization of the clinical approach with the large-scale applicability of the public health approach. It provides valuable health promotion services at low cost.

In the present applications, the computer is used as a coordinating and mailing system to guide self-directed change and to provide feedback of progress. By linking the interac-

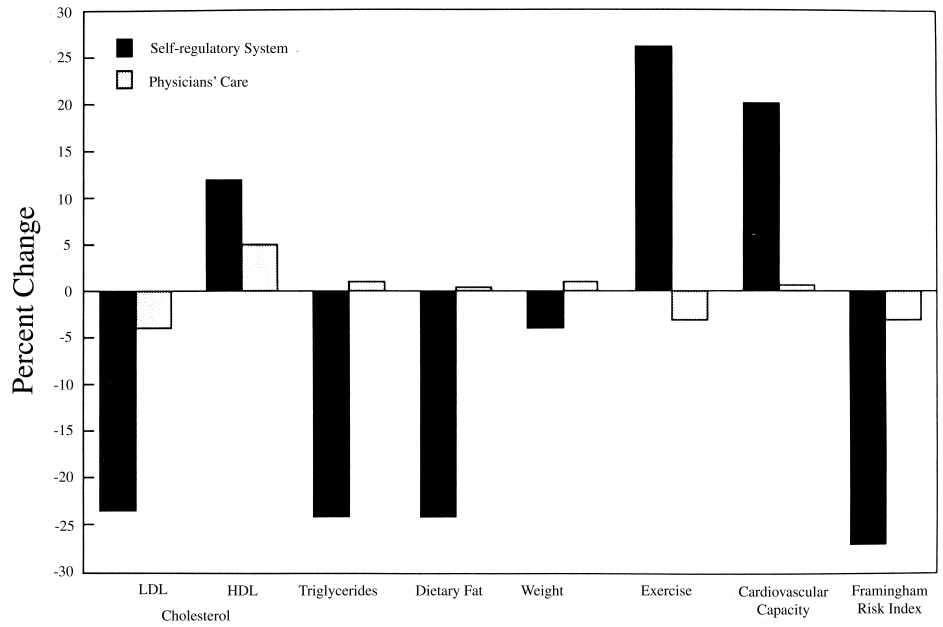

Figure 9. Reduction in multiple risk factors by patients with coronary atherosclerosis depending on whether they received the usual care from their physicians or training in self-management of health habits.

SOURCE: Plotted from data of Haskell et al.[24]

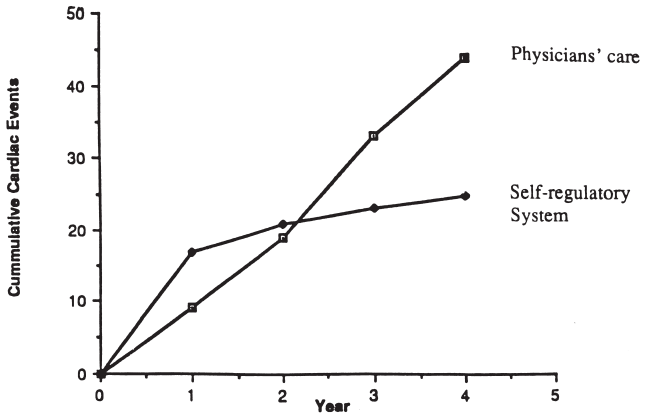

Figure 10. Differences in the number of cardiac deaths, hospitalizations for nonfatal myocardial infarction, and other cardiac events for patients who received the usual care from their physician or training in self-management of health habits.
SOURCE: Plotted from data of Haskell et al.[24]

tive aspects of the self-management model to the Internet, one can vastly expand its availability to people wherever they may live, at whatever time they may choose to use it.

Health Promotion in Children Through Interactive Media

The interactive capabilities of electronic technologies are beginning to be creatively enlisted for health promotion. A company in Silicon Valley is developing interactive video games that raise children's perceived self-efficacy and enable them to manage chronic health conditions.[25]

In a role-playing video game for diabetic children, they win points depending on how well they understand the diabetic condition and regulate the diet, insulin, and blood sugar levels of two wacky diabetic pachyderms, *Packy* and *Marlon*. They set out to retrieve the food and diabetes supplies snatched by pesky enemy critters in a diabetes summer camp. To succeed, children have to boost the elephants' health by managing their diabetes as they fight off the pesky critters using their trunks as water cannons and peanut launchers. The better the children manage the meals, blood glucose, and insulin dosage of the pachyderm duo to stay in the safe zone, the more points the children win.

Children love the video game. They quickly become experts in how to manage diabetes (Figure 11). In assessments conducted 6 months later,[26] the interactive role playing raises the children's self-care efficacy. They talk more freely about their diabetes and their feelings about it. They adopt dietary and insulin practices to keep their blood sugar level under control. They reduce urgent doctor visits for diabetes emergencies by 77%. Control children who played a video game unrelated to health decreased their self-care and increased emergency doctor visits by 7%.

Asthmatic children learn how to manage their condition by helping an asthmatic dinosaur named *Bronchiasaurus* stay strong and healthy while on a risky mission in an environment riddled with allergens. In the interactive game, children learn how to avoid asthma triggers, to keep the air free of respiratory irritants, to track peak flow, and to take medication. The video game improves knowledge about asthma, enhances perceived effi-

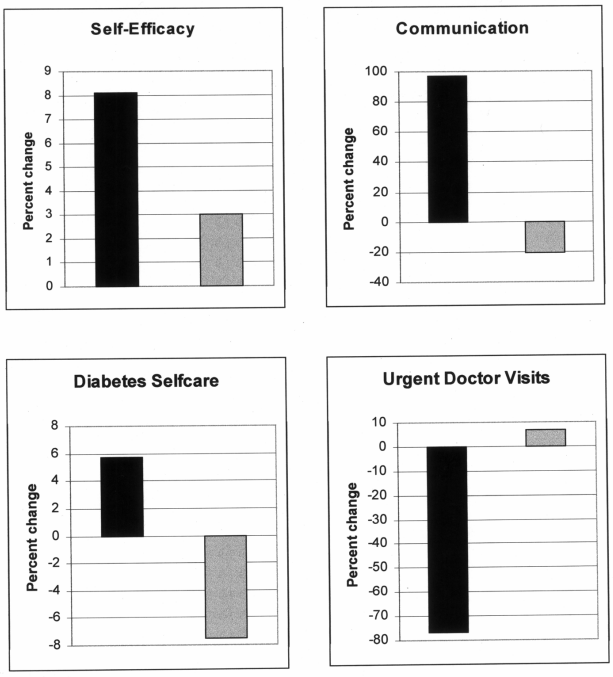

Figure 11. Changes exhibited in a 6-month follow-up in perceived self-efficacy to manage different aspects of diabetes, child-initiated discussions about diabetes, level of diabetes self-care, and number of emergency doctor visits by children who had the benefit of the role-playing video game and diabetic control children who played other entertainment video games.[26]

cacy to avoid things that trigger asthma attacks, and improves use of emergency medications.[27]

Children with cystic fibrosis are taught how to deal with their lung problem by using medications and physical therapy to keep the lungs of a virtual puppy clear. Another interactive video game discourages children from smoking promoted by the *Blackburn Tobacco Company.* A daring surgeon enters the body in microscopic size with lasers to repair the damage done by smoking to save the smoker's life. He clears phlegm from the bronchial tubes, removes tar deposits and precancerous cells from the throat and lungs, removes plaque and a deadly blood clot in the arteries, and enters the brain to conquer nicotine addition. The children become experts in the harmful effects of smoking. They lose any appetite for it.

These health-promoting videos are being widely distributed to families by pediatricians. This is but the beginning in the creative use of the interactive video technology to promote childhood health.

Childhood Health Promotion Models

Many of the lifelong habits that jeopardize health are formed during childhood and adolescence. For example, unless youngsters take up the smoking habit in their teens, they rarely become smokers in adulthood. It is easier to prevent detrimental health habits

than to try to change them after they become deeply entrenched as part of a lifestyle. Prevention should be given priority but rarely is.

Health habits are rooted in familial practices. But schools have an important role to play in promoting the health of a nation. This is the only place where all children can be easily reached. It is a natural setting for promoting healthful eating and exercise habits, discouraging smoking and other types of substance abuse, and building generic self-management skills.

An effective preventive program includes four major components. The first component is informational. It informs children of the health risks and benefits of different lifestyle habits. The second component develops the social and self-management skills for translating informed concerns into effective preventive practices. The third component builds a resilient sense of efficacy to support the exercise of control in the face of difficulties and setbacks that inevitably arise. The final component enlists and creates social supports for desired personal changes.

Educational efforts to promote the health of youths usually produce weak results. They provide factual information about health. But they usually do little to equip children with the skills and efficacy beliefs that enable them to manage the emotional and social pressures to adopt detrimental health habits.

Managing health habits involves managing social relationships, not just targeting a specific health behavior for change. Health promotion programs that include the essential elements of the self-management mastery model prevent or reduce injurious health habits. Health knowledge can be conveyed readily, but changes in values, self-efficacy, and health habits require greater effort. The more behavioral mastery experiences provided, the greater the beneficial effect.[28] The more intensive the program, and the better the implementation, the stronger the impact.[29] Comprehensive approaches that integrate guided mastery health programs with family and community efforts are more successful in promoting health and in preventing detrimental habits than are programs in which the schools try to do it alone.[30]

Schools are inadequately equipped with the resources, training, and incentives to undertake health promotion and early modification of habits that jeopardize health. As in other social systems, schools focus on areas in which they are evaluated. They are not graded for health promotion. When preventive programs are grudgingly allowed in schools, they try to do too much, with too little, in too short a time, with fitful quality of implementations to achieve much. Such efforts often do more to discredit psychosocial approaches through deficient implementation than to advance the health of youths.

Health promotion must be structured as a part of a societal commitment that makes the health of its youth a matter of high priority. A serious commitment must provide the personnel, incentives, resources, and the operational control needed to do the job well. The programs should be *in* the school, but not *of* the school. New school-based models of health promotion should operate together with the home, the community, and the society at large.

Schools' health-related practices need changing as well. Schools that are provided with a brief health promotion curriculum and encouraged to lower the fat content of their lunch offerings and enhance their physical activity offerings produce lasting improvements in children's eating and exercise habits.[31] It is the height of irony to strive to promote healthful habits in schoolchildren while schools promote in their lunch program fast foods and house vending machines that dispense sodas and candy in return for substantial payments to schools by commercial enterprises.

Self-Management of Chronic Diseases

The weight of disease is shifting from acute to chronic maladies. The self-management of chronic diseases is another example of the use of self-regulatory and self-efficacy theory to develop cost-effective models with high social utility. Biomedical approaches are ill-suited for chronic diseases because they are devised mainly for acute illness. The treatment of chronic disease must focus on self-management of physical conditions over time.

Holman and Lorig[32] devised a generic self-management program in which patients are taught pain control techniques, self-relaxation, and proximal goal setting combined with self-incentives as motivators to increase level of activity. Participants are also taught problem-solving self-diagnostic skills and how to take greater initiative for their health care in dealings with health personnel. These skills are developed through modeling of self-management skills, guided mastery practices, and informative feedback.

In the self-management of arthritis, the program is implemented in groups in community settings by leaders who lead active lives despite their arthritis (Figure 12). A 4-year follow-up with arthritic patients reveals that it retards the biological progression of diseases, raises perceived efficacy, reduces pain, markedly decreases the use of medical services by 43%, and improves the quality of life. Both the baseline efficacy beliefs and the efficacy beliefs instilled by the self-management program predict the health benefits 4 years later.

The self-management approach provides a generic model that can be adapted with supplementary components to different chronic diseases. Indeed, the self-management program produces similar health benefits for people suffering from other types of chronic diseases, such as heart disease, lung disease, stroke, and arthritis.[33]

SOCIALLY ORIENTED APPROACHES TO HEALTH

The field of health has been plagued by a contentious dualism. It gets politicized in battles between individualist approaches and structuralist approaches to health. The individualist proponents argue that people can exercise a good deal of control over their health. So it is their responsibility to maintain it. The structuralist proponents argue that health is largely the product of social, environmental, political, and economic conditions, over which individuals have little control. In actuality, health promotion needs both approaches, not contentious debates.

The quality of health of a nation is a social matter, not just a personal one. It requires changing the practices of social systems that impair health rather than just changing the habits of individuals. We do not lack sound policy prescriptions in the field of health. What is lacking is the collective efficacy to realize them. The main focus of a social approach is on collective enablement for changing social, political, and environmental conditions that affect health.[4] Socially oriented approaches seek to raise public awareness of health hazards, to educate and influence policy makers, to build community capacity to change health policies and practices, and to mobilize the collective citizen action needed to override vested political and economic interests that benefit from existing unhealthful practices.

Social cognitive theory extends the conception of human agency to collective agency.[34,35] People do not operate as isolates. They work together to improve the quality of their lives. Their shared beliefs in their collective efficacy to accomplish social change

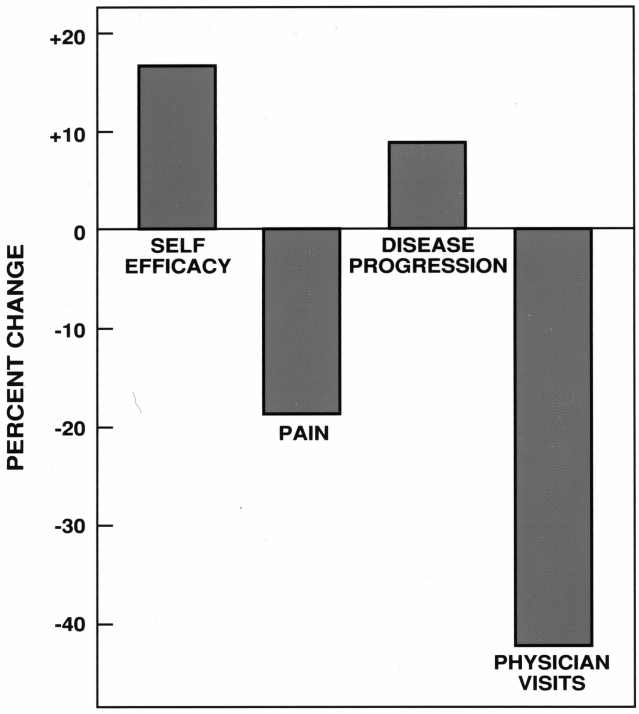

Figure 12. Enduring healthful changes achieved by training in self-management of arthritis as revealed in a follow-up assessment 4 years later.
SOURCE: Plotted from data of Lorig (1990).[37]
NOTE: The 9% biological progression of the disease is much less than the 20% disease progression one would normally expect during 4 years for this age group.

play a key role in the policy and public health approaches to health promotion and disease prevention. For example, cigarette smoking is the most personally preventable cause of death. People got smoke-free workplaces, restaurants, public buildings, and airliners through their own collective action, not through the governmental agencies with the responsibility to protect national health. Lobbyists get legislators to block tobacco regulation (Figure 13). The more tobacco money the legislators get, the more dutifully they vote against tobacco regulation.

The political impediments to legislative initiatives take the form of the obstructive triad—defeat, defang, and deregulate. The obstructive strategy is to defeat legislative initiatives, preferably in congressional committees, to spare legislators public votes that may be unpopular with their constituents. Laws provide the general guidelines. Congressional staff must convert them into operational regulations. If you cannot defeat the legislation, defang it by translating the law into regulations that circumvent the intent of the legislation. If you cannot defang it, deregulate the regulators to undermine the monitoring and implementation of the legislation. With industry lobbyists and legislators erecting protective barriers, the social battles over health shift increasingly to grassroots initiatives at local levels.

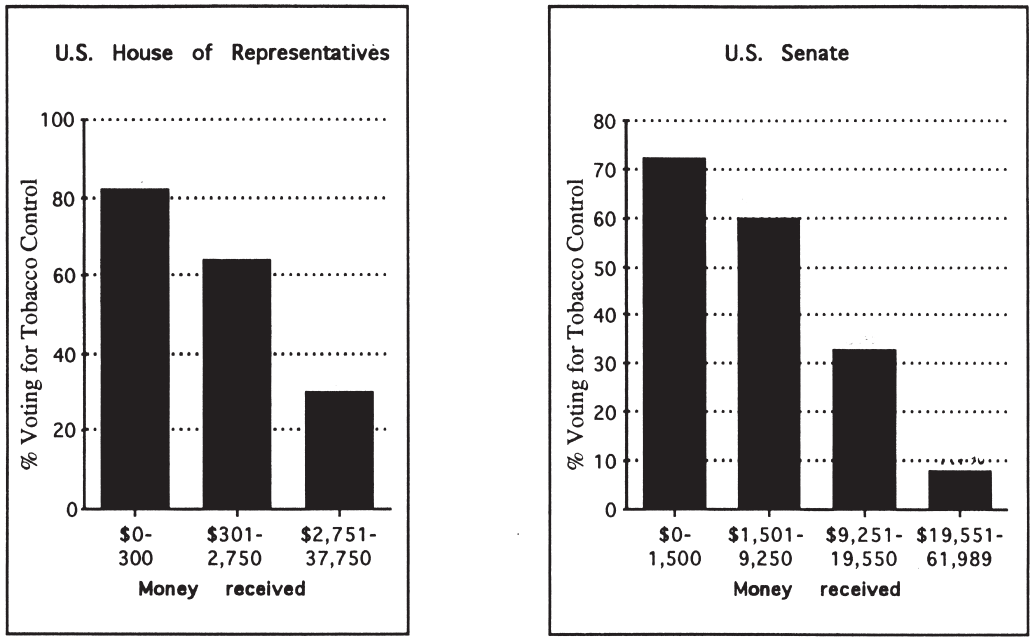

Figure 13. Relationship between the amount of campaign money legislators receive from the tobacco industry and their likelihood of voting against legislation to regulate tobacco products.

SOURCE: Public Citizen Health Research Group, 1993.[38]

Enablement for Community Self-Help

While collective efforts are made to change unhealthful social practices, people need to improve their current life circumstances over which they have some control. We need to devote more attention to psychosocial models on how best to enable people to work together to improve their health at local levels. The approaches that work best promote community self-help. But people need to be given the necessary resources and enabling guidance to help themselves. Otherwise, simply to tell people with intractable problems to fend for themselves is an evasion of societal responsibility. Unsupported prescription of local self-help can be easily used as a political subterfuge for civic neglect.

A community effort to reduce infant mortality resulting from unsanitary conditions in poor Latino neighborhoods provides one example of effective collective enablement.[36] The community was fully informed of the impact of unsanitary conditions on children's health through the local media, churches, schools, and neighborhood meetings conducted by influential persons in the community. The residents were taught how to install plumbing systems, sanitary sewerage facilities, and refuse storage. They were also taught how to secure the financing needed from different local and governmental sources. This enabling self-help program greatly improved sanitation and markedly reduced infant mortality.

Components of Psychosocial Models for Social Change

There are three major components in the social cognitive theory for promoting psychosocial changes society-wide.[16,18] The first component is a sound *theoretical model* that specifies the determinants of psychosocial change and the mechanisms through which they produce their effects. This knowledge provides the guiding principles. The second component is a *translational and implementational model* that converts theoretical principles into an innovative operational model by specifying the content, strategies of change, and their mode of implementation. The third component is a *social diffusion model* on how to promote adoption of psychosocial programs in diverse cultural milieus. It does so by making functional adaptations of the programs to different sociostructural circumstances, providing enabling guidance, and enlisting the necessary resources to achieve success. We construct theories and clarify how they work. But we do not profit from our successes because we fail to develop effective translational and social diffusion models.

If we are to contribute significantly to the betterment of human health, we must broaden our perspective on health promotion and disease prevention beyond the individual level. This calls for a more ambitious socially oriented agenda of research and practice. We can further amplify our impact on human health by making creative use of evolving interactive technologies that expand the scope and impact of health promotion efforts. But this is another story. And I have come to the end of this one.

As you venture forth to promote your own health and that of others, may the efficacy force be with you.

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