rces
motion

w that Wellsource™ has
sal programs and over 100
es include health promotion
ssing wellness reports,

comprehensive wellness
ıgram, designed for use with
ess and health promotion.

ısive coronary risk profile
son's awareness of their
encourages positive
es.

Materials
rials provide an additional
ist the health professional
llness endeavors. Materials
lest educational guides to
s.

rams:
Stress Profile
etry • Treadmill GXT
sis • Smoker's Profile
Plus • Heartlife Fitlog
tion • Risk Assessment
• LIFE • Step Test GXT
ess Profile • Physical Exam
• Health Age • Heart Chec
• Medical records systems

Wellsource™ Catalog call
)-533-9355

An Ecological Perspective on Health Promotion Programs

Kenneth R. McLeroy, PhD
Daniel Bibeau, PhD
Allan Steckler, DrPH
Karen Glanz, PhD, MPH

During the past 20 years there has been a dramatic increase in societal interest in preventing disability and death in the United States by changing individual behaviors linked to the risk of contracting chronic diseases. This renewed interest in health promotion and disease prevention has not been without its critics. Some critics have accused proponents of life-style interventions of promoting a victim-blaming ideology by neglecting the importance of social influences on health and disease.

This article proposes an ecological model for health promotion which focuses attention on both individual *and* social environmental factors as targets for health promotion interventions. It addresses the importance of interventions directed at changing interpersonal, organizational, community, and public policy, factors which support and maintain unhealthy behaviors. The model assumes that appropriate changes in the social environment will produce changes in individuals, and that the support of individuals in the population is essential for implementing environmental changes.

INTRODUCTION

During the past 20 years, there has been a dramatic increase in public, private, and professional interest in preventing disability and death in the United States through changes in individual behaviors, such as smoking cessation, weight reduction, increased exercise, dietary change, injury prevention, protected sexual activity, and participation in screening and control programs. While much of this interest in health promotion and disease prevention has been stimulated by the epidemiologic transition from infec-

Kenneth R. McLeroy and Daniel Bibeau are with the Department of Public Health Education, University of North Carolina, Greensboro.

Allan Steckler is with the Department of Health Behavior and Health Education, University of North Carolina, Chapel Hill.

Karen Glanz is with the Department of Health Education, Temple University, Philadelphia.

Address reprint requests to Kenneth R. McLeroy, PhD, Department of Public Health Education, Room 49, McNutt Building, University of North Carolina at Greensboro, Greensboro, NC 27412.

Health Education Quarterly Vol. 15(4): 351–377 (Winter 1988)
© 1988 by SOPHE. Published by John Wiley & Sons, Inc.
CCC 0195-8402/88/040351-27$04.00

tious to chronic diseases as leading causes of death, the aging of the population, rapidly escalating health care costs, and epidemiologic findings linking individual behaviors to increased risk of morbidity and mortality,[1] more recent development, such as the AIDS epidemic, have also contributed.

Within the private sector, this interest in health promotion has led to the extensive development and implementation of health promotion programs in the worksite,[2] increases in the marketing of "healthy" foods,[3] and increased societal interest in fitness.[4] In the public sector this interest has led to national campaigns to control hypertension[5] and cholesterol,[6] the establishment of the Office of Disease Prevention and Health Promotion within the Public Health Service and the Center for Health Promotion and Education within the Centers for Disease Control, the development and implementation of community-wide health promotion programs by both governmental agencies and private foundations,[7] and the establishment and monitoring of the 1990 Objectives for the Nation in health promotion.[8] Within the professions, interest in health promotion led to the publication of the Lalonde Report in Canada,[9] John Knowles' work on "The Responsibility of the Individual"[10] and the Surgeon General's Report[11] on Health Promotion/Disease Prevention in the United States, and "Health Promotion: A Discussion Document on the Concept and Principles" in Europe.[12] More recently, journals have appeared which are devoted exclusively to articles on health promotion programs and activities (Note 1); existing journals both within and outside of traditional public health disciplines have devoted theme issues to health promotion topics (Notes 2 and 3); international conferences on health promotion have been held (Note 4); and health education training programs have begun to focus more extensively on health promotion topics and issues.

However, The increased interest in health promotion has not been without its critics. Proponents of individually-oriented behavior change strategies have been accused of supporting a victim-blaming ideology which

> serves as a legitimization for the retrenchment from rights and entitlements; in relation to the social causation of disease it functions as a colossal masquerade. The complexities of social causation are only beginning to be explored. The ideology of individual responsibility, however, inhibits that understanding and substitutes instead an unrealistic behavioral model. It both ignores what is known about human behavior and minimizes the importance of evidence about the environmental assault on health. It instructs people to be individually responsible at a time when they are becoming less capable as individuals of controlling their total health environment. Although environmental factors are often recognized as "also relevant," the implication is that little can be done about an ineluctable, technological, and industrial society . . . . What must be questioned is both the effectiveness and the political uses of a focus on life-styles and on changing individual behavior without changing social structure and processes (page 256).[13]

In discussing the life-style theory of disease, Tesh notes that "the life-style hypothesis approaches disease as though ill health is the result of personal failure. It dismisses with a wave of a hand most environmental toxins and it ignores the crucial connection between individual behavior and social norms and rewards. It is, in fact, a victim-blaming approach to disease" (page 379).[14] While both of these authors recognize that a life-style approach to disease prevention may yield marginal improvements in health, they suggest that prevention strategies that focus on individual behavior changes

should remain secondary to environmental approaches, including changes in the physical *and* social environment (Note 5).

In responding to some of the health promotion critics, Green[15,16] notes that few health promotion programs take an exclusively health behavior focus, and that programs which focus on system change must ultimately be concerned with both the behavior and health of individuals. Moreover, system-change approaches ultimately rely on the consent of the governed in a democratic and pluralistic society, and must deal with the issue of conflicting values. This suggests that the major challenge of system-change approaches is implementing the changes.[17]

Green's position is partially supported by data from the National Survey of Worksite Health Promotion Activities in which it was reported that of the 27% of worksites offering stress management activities, "82.2% said they provided information to employees, while the same percent mentioned introducing organizational changes to intervene with stress-producing activities (page 20)."[18] Also, as Diana Chapman Walsh has noted, employee and union support are critical to introducing systems approaches to smoking control in the worksite.[19]

However, Green's response fails to recognize that the language we use, and the models we adopt for health promotion programming, may still inadvertently serve to direct our attention toward certain types of interventions and away from others.[20] Specifically, the use of terms such as "life-style," and "health behavior" may focus attention on changing individuals, rather than changing the social and physical environment which serves to maintain and reinforce unhealthy behaviors. Green articulated this focus in an earlier article.[21]

> . . . The dominant contributions to the literature on interventions in health have been, perhaps regrettably, from psychology. . . . Even in large-scale community interventions such as the Stanford three-community studies, the behavioral science contributions to planning the interventions have been made largely by psychologists. The result is that the behavioral change interventions have tended to emphasize the individual, and have been most useful in patient education. This concentration of behavioral science applications is sometimes at the expense of action on needed change in organizational, institutional, environmental, and economic conditions shaping behavior (page 217).

Thus, there is still the risk of a paradigm emerging for health promotion activities which neglects the social causation of disease by its emphasis on individuals and individual choices.[22]

The role of life-style and individual choices in determining health status may also be misunderstood or misapplied by the general public. In a recent talk, the Surgeon General, C. Everett Koop, noted the public retribution against cigarette smokers, drunk drivers, teenagers who become pregnant, drug addicts, and wife beaters, and the possibility that such retribution would spread to AIDS victims.[23] The Circle K Corporation, as announced in a recent letter to employees, has dropped health insurance coverage for conditions it defines as "personal lifestyle decisions," including AIDS, alcoholism, and drug use.[24] Thus, even if professionals working in the health promotion arena are successful in incorporating environmental influences into their interventions, the language used to describe health promotion activities may, inadvertently, be misused to support a victim-blaming ideology.

The extent to which health promotion focuses on individuals and individual choices and ignores the social and organizational context of health-related behaviors may also

affect the extent to which we are able to reach specific groups in society. For example, Minkler[25] has discussed the problems of developing health promotion programs to reach the elderly in long-term care settings, and in reaching the poor, inner city elderly.[26] Similar problems are inherent in reaching groups in society who are at greatest risk for behaviorally related health care problems, such as the poor, intravenous drug users, delinquent adolescents, and the socially isolated.

ECOLOGICAL MODELS

One conceptual framework which serves to direct attention to both behavior and its individual *and* environmental determinants is an ecological perspective, such as that proposed by Urie Brofenbrenner.[27,28] In Brofenbrenner's model, behavior is viewed as being affected by, and effecting, multiple levels of influence. Specifically, Brofenbrenner divides environmental influences on behavior into the micro-, meso-, exo-, and macrosystem levels of influence. The microsystem refers to face-to-face influences in specific settings, such as interactions within one's immediate family, informal social networks, or work groups. The mesosystem refers to the interrelations among the various settings in which the individual is involved. These may include family, school, peer groups, and church. The mesosystem is the system of microsystems. The exosystem refers to forces within the larger social system in which the individual is embedded. Examples might include unemployment rates which effect economic stability. The macrosystem refers to cultural beliefs and values that influence both the microsystem and the macrosystem. Examples would include cultural beliefs about smoking, such as that promoted by the Marlboro man, or the importance of selected foods in establishing cultural identity, such as black-eyed peas and collard greens on New Year's day. Not only do each of these subsystems affect behavior, but the subsystems themselves may change as their members are replaced or altered. Thus, an ecological perspective implies reciprocal causation between the individual and the environment, sometimes referred to as a transactional model (Note 6).[29,30]

By combining a theory of individual development with Brofenbrenner's ecological model, Belsky[31] has developed a framework to account for individual, family, social, and cultural influences in child abuse. Brofenbrenner's ecological model has also been used as a framework for viewing Type A behavior,[32] and identifying potential system-level interventions. While not explicitly linked to Brofenbrenner's model, Winett[33] has used an ecological model for assessing health life-styles. Also, Jackson[34] has developed a behavioral-environmental model of health problems that has been applied to health promotion issues. Seidman has applied an ecological model using levels of analysis to the problems confronting community psychology,[35] and Kersell and Milsum[36] have used an ecological approach to integrate individual and environmental factors in studying behavior.

A public health model which can be viewed as an ecological or systems model is the host-agent-environment model.[37,38] Whereas most appropriately used with infectious diseases—because of the usual presence of a single agent—the host-agent-environment model indicates that population changes in infectious disease rates may be caused by changes in the host, the agent, or the environment. For example, populations may develop resistance to specific infectious diseases, thus lowering the infection rate. The

agent may become more or less virulent; or the environment may affect the distribution or importance of specific vectors.

The importance of ecological models in the social sciences is that they view behavior as being affected by, and affecting the social environment. Many of the models—like Brofenbrenner's—also divide the social environment into analytic levels that can be used to focus attention on different levels and types of social influences and to develop appropriate interventions. Thus, ecological models are systems models, but they differ from traditional systems models by viewing patterned behavior—of individuals or aggregates—as the outcomes of interest (Note 7).

One of the problems with many ecological models of social behavior is that they lack sufficient specificity to guide conceptualization of a specific problem or to identify appropriate interventions. For example, the host-agent-environment model, by collapsing the physical and social environment into a single source of influences, is difficult to apply in identifying appropriate interventions of many current health problems, particularly those related to health promotion. Moreover, the host-agent-environment model was originally used with a focus on morbidity or mortality as outcomes, and behavior as a contributing host characteristic, rather than viewing behavior as an outcome of interest.

AN ECOLOGICAL MODEL FOR HEALTH PROMOTION

A variation on Broffenbrenner's model—which is used as the conceptual framework for this theme issue of *Health Education Quarterly*—also borrows from the work of Belsky,[31] and Steuart.[39] In this model, patterned behavior is the outcome of interest, and behavior is viewed as being determined by the following.

(1) intrapersonal factors—characteristics of the individual such as knowledge, attitudes, behavior, self-concept, skills, etc. This includes the developmental history of the individual.
(2) interpersonal processes and primary groups—formal and informal social network and social support systems, including the family, work group, and friendship networks.
(3) institutional factors—social institutions with organizational characteristics, and formal (and informal) rules and regulations for operation.
(4) community factors—relationships among organizations, institutions, and informal networks within defined boundaries.
(5) public policy—local, state, and national laws and policies.

An implicit assumption of these levels of analysis is that health promotion interventions are based on our beliefs, understandings, and theories of the determinants of behavior, and that these five levels of analysis reflect the range of strategies currently available for health promotion programming. Other levels of analysis could be employed as understanding of the causes and potential interventions to modify health related behavior change.

The following discussion will review some of the processes operating at each of these levels of analysis, how they affect health related behaviors, and potential health promotion interventions that may be employed at each level of analysis.

Intrapersonal Factors

As we have noted, many of the behavior change models used in health promotion have been borrowed or adapted from psychology.[21] Psychological models which have been used to explain health related behavior or in program development include: value-expectancy theories and attitude change models, such as the health belief model[40] and the Fishbein theory of reasoned action;[41] social learning theory;[42,43] concepts of control, including locus of control, [44] and the psychology of control;[45] models of stress and coping;[46] attribution theories;[47] personality theories, such as type-A behavior[48] and the Hardy Personality;[49] models of decision making;[50] developmental models;[21] and models which incorporate incentives, borrowed from social learning theory or operant conditioning.[51,52]

When psychological theories are applied to specific health problems or health related behaviors, the resulting models may incorporate physiological processes and/or interpersonal influences. Models of smoking acquisition and maintenance, for example, may include concepts of nicotine metabolism and excretion,[53] and the role of family and peers as role models or social influences in the acquisition of smoking behavior by teens.[54]

Our interventions may also incorporate techniques to modify the nature and extent of social influences. For example, many adolescent smoking prevention programs incorporate peer pressure resistance training (or social inoculation) and information about parental influences;[55] and smoking cessation programs and weight loss programs may incorporate social support mechanisms. However, even when programs incorporate social influences as part of the intervention—such as in peer counseling programs—the purpose is to change individuals, rather than to modify the social environment.[56] Adolescents are trained to resist interpersonal influences related to smoking, rather than attempting to modify the norms and values that adolescents' cliques, networks or families have about smoking. These interventions may reflect the implicit assumption that the proximal causes of behavior and/or mechanisms for producing behavioral changes lie within the individual, rather than in the social environment.

Interventions at the intrapersonal level, then, use a variety of intervention strategies or levels of intervention—such as educational programs, mass media, support groups, organizational incentives, or peer counseling—but the theory of change is one of changing individuals, and the targets of the intervention include characteristics of the individual, such as knowledge, attitudes, skills, or intentions to comply with behavioral norms. This distinction between levels of intervention and the targets of interventions is an important one in understanding ecological strategies, and is similar to Steuart's distinction between units of practice (the theory of the problem) and units of solution (levels of intervention).[57]

Interpersonal Processes

Interpersonal relationships with—family members, friends, neighbors, contacts at work, and acquaintances—are important sources of influence in the health related behaviors of individuals. For example, significant others are important influences in the decision to visit a physician for non-emergency care, and the timing of doctor visits.[58] Social relationships affect: How individuals cope with stress;[59] the acquisition and

maintenance of alcohol and drug use behaviors;[60] decisions about where to live;[61] the number of preventive health behaviors that individuals engage in;[62] the risk of mental illness;[63] adolescents' risk of pregnancy,[64] and the ability of adolescents to cope with pregnancy;[65] political attitudes;[66] and the risk of morbidity and mortality.[67]

Social relationships are essential aspects of social identity. They provide important social resources, including emotional support, information, access to new social contacts and social roles, and tangible aid and assistance in fulfilling social and personal obligations and responsibilities.[68] These social resources, frequently referred to as social support, are important mediators of life stress,[69] and important components of overall well being.[70]

Although the influence of interpersonal relationships on the health related behaviors of individuals is widely recognized, health promotion interventions that use interpersonal strategies have typically focused on changing individuals through social influences, rather than on changing the norms or social groups to which individuals belong. Examples in the areas of adolescent drug use and adolescent pregnancy prevention programs are discussed below.

Drug Use Prevention Programs

Drug use prevention programs that incorporate social influence interventions have viewed social influences on drug use as either "peer pressure," or within a social influence model in which drug use is viewed as being affected by individuals acquiring positive attitudes, values, or norms regarding drug use from their social groups. Interventions based on a peer pressure model provide adolescents with knowledge and skills to resist negative peer influences; whereas interventions based on a social influence model include information on the social antecedents and consequences of drug use, and attempt to modify individuals' perceptions of group norms about the use of drugs through the use of peer counselors.[71]

The problem with these approaches to incorporating social influence interventions into health promotion programs is that they ignore important aspects of the structure and function of social relationships. Peer influence and coercion are approached as if they were the result of a collection of dyadic interactions. What is missing is a recognition of the importance of the source of influence and the social groups to which individuals belong.[72] For example, one can think of individuals as belonging to one or more social networks, with networks defined as individuals who share linkages. Networks vary in both structure and function. Structurally, some networks are relatively homogeneous, whereas others are more heterogeneous. In some networks all members are connected to one another, while other networks may be more diffuse (less dense). In some networks, individuals share multiple linkages (multiplexity), while in other networks relationships are less tight. Functionally, networks may provide individuals with a variety of social resources, including information, access to social contacts, social identity, emotional support, and instrumental support.[73] Both the structure and function of adolescent social networks may affect the risk of drug use.

Structurally, we may hypothesize that adolescents who have primary membership in a dense, homogeneous network will be more influenced by the norms and values of that group than individuals who belong to multiple, less dense, less homogeneous groups.[74] Since adolescent social networks may be more or less accessible depending

upon both the characteristics of the network and the characteristics of the individual, individuals may be attracted to what are perceived as more deviant networks because they are perceived as being more accessible, or because the deviant networks occupy positions of relatively high status, or are more influential within a given setting.[75,76]

Funtionally, the nature of the networks to which an individual belongs will affect access to and the acceptability of information—such as that pertaining to drug use. As Wellman[77] notes,

> People do not form their attitudes in direct response to their attributes, which in themselves have no causal force. Rather, people acquire norms, as they do other pieces of information through their ties in social networks. Information flows between network clusters through shared members. Where these clusters have few links to other parts of the network, distinctive subcultures form. Thus, not only is normatively guided behavior constrained by the structure of networks, but the inculcation of these norms is differentially reproduced through these networks (page 165).

Networks influence not only the behavior of individuals within the network, but also the behavior of individuals who are outside of the network linkages. In his study of adolescent network relationships within schools, Cairns[74] has reported that adolescent cliques may exist among aggressive students—instead of aggressive individuals being socially isolated as previously reported in the literature—and that aggressive cliques may be the dominant social grouping in some schools. Thus, cliques composed of aggressive students may be feared and respected by other students and may influence the behavior of students who are not members of the aggressive clique by effecting their relationships with other students in the school.

Therefore, using a network framework, we can conceptualize schools as representing overlapping friendship networks with varying degrees of influence on individuals' behaviors, depending upon the norms of the group(s), the importance of the networks for the individual, and the extent to which the individual is exposed to conflicting information through belonging to multiple networks.

This reframing of the problem of adolescent drug use from one of nebulous peer influences to one of how existing network structures may influence individuals' behaviors, allows one to begin thinking about non-individual interventions for drug abuse prevention. That is, our drug use prevention programs might focus on:

(1) Changing the norms about drug use within existing networks;
(2) Increasing accessibility to less deviant adolescent peer groups;
(3) Creating alternative networks; and
(4) Decreasing the desirability of membership in deviant networks.

Adolescent Pregnancy Prevention

Similar strategies apply to adolescent pregnancy prevention,[78] programs to increase seat belt use,[79] and programs to promote other positive behaviors.[80] In adolescent pregnancy prevention, for example, there is evidence that friendship patterns both effect and are effected by levels of sexual experience, at least among white adolescent males and females. White adolescent females who have sexually active best friends are more likely to become sexually active than if their best friends are not sexually exper-

ienced. White males, however, may select best friends on the basis of sexual experience, rather than being directly effected by best friends' level of sexual activity.[81,82] Thus, there is evidence for differential friendship patterns based on sexual experience.

Families and sexual partners may also influence adolescents' risk of pregnancy. For example, the age at which adolescent females initiate sexual activity is associated with the age at which their mothers initiated intercourse, and adolescent females with mothers or siblings who became pregnant during their teens are also more likely to become pregnant as teenagers. Adolescents in more committed relationships with their partners, and who have better communication patterns with their partners are more likely to use effective contraceptives.[83]

This evidence of peer and family influences on risk factors for adolescent pregnancy suggests that prevention programs need to include interventions directed at these sources of influences. Specific types of interventions could include family support programs network development, support groups, skills training,[84] and the development of norms for contraceptive use in male adolescent networks.

Interpersonal Interventions

The importance of interpersonal influences in drug use and adolescent pregnancy suggests that, from an ecological perspective, interpersonal approaches should be designed to change the nature of existing social relationships. Specifically, they should be designed to modify the interpersonal social influences which serve to encourage, support and maintain undesirable behaviors. While the ultimate target of these strategies may be changes in individuals, the proximal targets are social norms and social influences.

Organizational Factors

Implicit in the preceding discussion is the assumption that an ecological perspective tends to refocus attention away from strictly intra-individual factors and processes which affect behavior and more towards environmental determinants of behavior, such as the effects of interpersonal relationships. A third level of environmental considerations within the ecological framework concerns organizations. Specific areas of concern include: how organizational characteristics can be used to support behavioral changes; the importance of organizational change as a target for health promotion activities; and the importance of organizational context in the diffusion of health promotion programs.

Organizational Supports for Behavior Change

With many people spending one-third to one-half of their lives in organizational settings—beginning with formal day care settings and extending through primary and secondary schools, universities, and work settings—it is obvious that organizational structures and processes can have substantial influence on the health and health related behaviors of individuals. In the worksite, for example, the technology of production

may expose individuals to hazardous chemicals and risks from injuries and accidents. The pace of work, excessive work loads and responsibilities, job complexity, shift work, and monotony have all been related to stress at work and to subsequent health effects. Management styles, lack of participation by workers, poor relationships with supervisors, and communication problems are also social worksite hazards.[85]

Organizations may have positive as well as negative effects on the health of their members. Organizations provide important economic and social resources. Organizations are important sources and transmitters of social norms and values, particularly through individual work groups and socialization into organizational cultures.[86] Voluntary organizations, such as neighborhood and professional associations, may serve as important mediators or mediating structures between individuals and the larger political and economic environment.[87] Organizational memberships are also an important component of social identity, and free time may be organized around participation in voluntary associations, such as churches, professional groups, and local neighborhood organizations.

As a context for health promotion activities and programs, organizations—particularly worksites—provide the opportunity to gain access to large groups of people where they spend much of their time.[88] Organizations provide the opportunity to build social support for behavioral changes, particularly if the new behavior is a group norm.[89] Organizational characteristics, such as the use of incentives, management and supervisor support, changes in rules and regulations (e.g., smoking restrictions), changes in benefits (e.g., insurance coverage and child care), and changes in the structure of work (e.g., time off to participate in health related activities) may all be used to support behavioral changes.[90,91]

Many of these characteristics of organizations have been used to support health promotion activities within worksites. Group competitions—which may promote group solidarity and cohesion—have been used in weight-loss programs.[92] Incentives have been used to promote smoking cessation and seatbelt use.[93,94] Stress reduction interventions have included improving worker supervisor relationships through supervisor training.[95] Corporations have begun to ban smoking at work and/or establish non-smoking areas,[96] and some corporations have included environmental modifications—such as changing and/or labeling food offerings in cafeterias—to support diet and weight loss changes.[3] Companies may also allow workers time off from work to participate in worksite programs, or may restructure working hours to encourage participation.[97,98]

Organizational Change As the Target for Health Promotion

While many worksite programs have used organizational changes to encourage or support behavioral changes among employees, the target of these interventions is usually employees, and not the organization itself. An important component of organizational strategies that may be under-emphasized in worksite programs is creating healthier environments in addition to creating healthier employees.[99] A focus on healthier environments may require that health promotion programs adopt an organizational development role, and establish linkages to other health-related efforts within the organization, including environmental protection, safety, and union and personnel activities. For example, a major health promotion effort in the worksite could involve

the development of adequate day care services or alternative work schedules for workers with young children, in addition to offering classes in stress and time management. The Green[100] article in this issue of *Health Education Quarterly* discusses the differing responsibilities of management, workers, and unions in achieving a comprehensive ecological approach to workers' health.

This discussion assumes that one of the purposes of health promotion programs in the worksite is to change "corporate culture"; that is, to include concerns about health outcomes in both tactical and strategic organizational decision making, and to include health related norms and values as part of the corporate ideology. There are existing examples of this both within and outside of the worksite. Johnson and Johnson[101] has established as a corporate goal having the healthiest workers in the world through changing workers and changing the worksite environment. In this issue of *Health Education Quarterly,* Robins and Klitzman[102] discuss the impact on worksites of a program to address the new Federal regulations governing hazard communications. They suggest that health education programs in the worksite can influence the importance of health as a worksite issue. Parcel, Simons-Morton, and Kolbe[103] discuss four phases of change in facilitating adoption of broad-based health programs in schools, including institutional commitment, changes in policies and procedures, changes in the roles and actions of staff, and new learning activities.

Organizational Influences on Program Diffusion

Nowhere is reciprocal causation between programs and organizations more evident than in the adoption, implementation, and institutionalization of programs in community settings.[104] Few community health promotion programs are "free standing." Rather, community health promotion programs are almost always initiated or conducted within some type of community organization or agency. Such organizations have been termed "host organizations."[105] Because funding has been available from federal and state sources, and private foundations, many organizations including schools, local and state health departments, hospitals, and voluntary community health agencies have initiated and implemented health promotion programs.

A current area of concern among health promotion practitioners and researchers is the extent to which health promotion programs located within host organizations survive over a long period of time in order to become firmly rooted in their host organizations. Because the missions and goals of these host organizations are often incompatible with health promotion program objectives and activities, many programs do not survive their initial period of grant funding. Such programmatic deaths can be both wasteful and harmful. They are wasteful in that it often requires considerable financial and human resources to implement successful programs. Premature termination, therefore, can be disruptive both to the organization that has made accommodations to implement the program, and to staff careers, since workers often make significant investments in such programs. Program termination can also be harmful in that it may be much harder for organizations to reestablish community trust after successful programs are prematurely ended.[106]

When health promotion programs do survive past the initial funding period and become integrated into the host organization, they are said to have become institution-

alized.[105] An important goal of health promotion program practitioners, then, is to facilitate the institutionalization of successful programs.

Program institutionalization is often thought of as the final step in an organizational process. An organization first becomes aware that some type of problem exists, it searches for and evaluates potential solutions to the problem, it selects a particular course of action, it implements the course of action (usually on a trial basis), it modifies what it has implemented, and over time, the innovation becomes integrated into the organization (i.e., institutionalization occurs).[107] In this process model of program innovation, the innovation both modifies and is modified by the host organization.

Important organizational processes operate at each stage to affect the degree of implementation, and the depth and breadth of institutionalization. For example, at the implementation stage, support from upper level management for the innovation, training of staff, and material support, are related to the degree of implementation. During the institutionalization phase, perceptions of the costs and benefits of the innovation, the development of coalition support around the innovation, the consistency between the innovation and the organization's mission and goals, and the extent to which there is an appropriate niche for the innovation within the organization, are all related to successful institutionalization.[105]

This suggests that an important organizational focus for health promotion programs and staffs must be on securing upper level organizational support for program implementation. Staff must also develop support for health promotion activities within the host organization, assuring that program goals and the host organization's mission and goals correspond, and develop and occupy a niche for program activities within the host organization for program institutionalization. In this issue of *Health Education Quarterly*, Monahan and Scheirer[108] discuss how the diffusion of preventive health programs in schools may be stimulated by external program advocates. Program advocates, such as state offices, may serve as linking agents between end users and the developers of an innovation to facilitate adoption and implementation.

Organizational Change and Health Promotion

This discussion of organizational processes in health promotion suggests that organizational changes are inherent in an ecological approach. Organizational changes are necessary to support long term behavioral changes among individuals, organizational change is an essential component of creating an organizational culture supportive of health issues, and organizational changes are necessary prerequisites for the adoption, implementation, and institutionalization of health promotion programs.

Community Factors

The concept of "community" has been identified as one of the key ideas in sociology,[109] and has historically occupied a central role in public health.[110] However, the term "community" has been defined in so many ways and used in so many contexts, that it has lost much of its meaning. Community may be used to refer to the psychological sense of community,[111] a political entity,[112] a functional spatial unit meeting

sustenance needs.[113] a unit of patterned social interaction,[114] or simply an aggregate of individuals in a geographic location.[113]

For the purposes of this paper community is viewed as having three distinct meanings. First, community refers to mediating structures, or face-to-face primary groups to which individuals belong. This view of community embraces families, personal friendship networks, and neighborhoods. This is analogous to Brofenbrenner's definition of a mesosystem.[27] Second, community can be thought of as the relationships among organizations and groups within a defined area, such as local voluntary agencies, local governmental health providers, local schools, etc. Third, community is defined in geographical and political terms, such that a community refers to a population which is coterminous with a political entity, and is characterized by one or more power structures.[115,116] The importance of these varying definitions of community is that they have differing implications for the development and implementation of health promotion interventions.

Community As Mediating Structures

An important component of community includes what have been called "mediating structures."[87] These include family, informal social networks, churches, voluntary associations, and neighborhoods, that may be important sources of social resources and social identity.

These mediating structures are repositories and important influences on the larger communities' norms and values, individuals' beliefs and attitudes, and a variety of health related behaviors. Because mediating structures represent strong ties, changes in individuals without the support of these mediating structures is difficult to achieve. Mediating structures also serve as connections between individuals and the larger social environment.[87]

Health promotion programs may use these mediating structures to deliver services within communities, or may attempt to develop or strengthen existing neighborhood organizations. For example, Eng, Hatch, and Callan[39] have discussed the important social functions that churches provide in rural, black communities, and the use of these organizations as the focal point for health related interventions. Lasater, Wells, Carleton, and Elder[117] have also discussed the use of churches as intervention sites in a spin-off of the Pawtucket Heart Health Program. A community organization approach is represented by Minkler's work[26] in the Tenderloin District.

Community As Relationships Among Organizations

The second definition of community concerns the relationships among organizations within a political or geographic region. In many communities, the total resources available for health and human services is severely limited. This is particularly true in rural areas and small towns, and in some areas of the country where cities and states are facing fiscal crises. Thus, in many communities organizations and agencies may compete with each other for scarce resources, including donations, volunteer time, media attention, and city and county tax dollars. Since many community organizations may provide similar or related services, resource competition may carry over to

competition and lack of collaboration in programming, resulting in inefficient use of resources. Since health promotion services, as with basic health services, are generally provided through existing community organizations, relationships between the host organization and other community agencies may be a critical issue in the development and delivery of services. A community focus, then, for health promotion activities may include increasing coordination among community agencies, and coalition building to influence community awareness, local health policies, and resource expenditures.

Discussions of interventions to promote interagency coordination are provided by Hasenfeld and Tropman[118] and Roemer.[119] Specific to health promotion/disease prevention, Winder[120] discusses the development of a pesticide forum to coordinate community concerns and health agency involvement with environmental pollutants, Minkler[26] addresses involving community organizations in work with the poor, inner city elderly, Defrank and Levenson[121] discuss the formation of a health promotion consortium, and Freudenberg and Golub[122] discuss the formation of a New York City Coalition to End Lead Poisoning.

Community As Power

The third definition of community within the context of health promotion concerns community as power structures. Power structures in cities, counties, and states, often play a critical role in defining community health problems and allocating resources—including funding, technical assistance, staffing, materials, and official and unofficial approvals—for their amelioration.

One of the most important roles played by community power structures is in controlling what issues are allowed to be placed on the public agenda.[115] Since health promotion issues may have political and economic ramifications, there will be potential consequences for powerful segments of the community. For example, smoking is not just a health issue. It is also an important economic issue. In the South the economics of smoking effects farmers, warehouse workers, and cigarette manufacturers. Elsewhere in the United States, smoking is an economic issue to those who transport tobacco products, advertising agencies, sales organizations, retailers, and governments that benefit from taxes on tobacco products. Similarly, diet, nutrition, and obesity problems are of economic interest to farmers, food processers, retailers, and restaurants.

Those who plan and conduct health promotion programs often overlook the political and economic consequences of their proposed interventions. Such oversights can lead to programmatic failure because important community power structures actively or passively block effective program implementation due to real or potential threats to their political and economic interests.

Also, those with the most severe health problems within a community are often those with the least access to sources of community power. They are the poor, the minorities, the rural, the uneducated, the unemployed or the underemployed, the homeless, the handicapped, and those with socially derided health conditions such as AIDS, mental illness, and alcoholism. Such groups are often left out of the process of defining problems and developing programmatic solutions. Such groups are often labeled perjoratively as "the hard to reach." They are hard to reach because their individual problems are so severe that they have little time, energy, or resources for partici-

pating in larger community structures and activities. Such groups are rarely politically organized and are cut off from community political processes and community power structures. Because of their social and political isolation they become the objects of services and programs which, while well intentioned, often fall short of solving basic problems.

An essential component of community health promotion, then, is increasing access by the disadvantaged to larger community political and power structures. Strategies to achieve this goal may include: (1) establishing contacts among divergent community networks,[123] (2) including representation from the disadvantaged population on community boards;[124] and (3) community organizing strategies.[122,125]

Community Interventions

The preceeding discussion indicates that defining communities as aggregates of individuals sharing common demographic or geographic characteristics neglects an important aspect of community, that is communities as relationships. Neglecting relationships may reduce the acceptability of our interventions within specific subgroups by neglecting the variations that exist within geographical areas in values, norms, attitudes and behaviors. These variations are not random, however, but are linked to specific networks and subcultures. The extent to which our interventions conflict with or support subcultural norms and values is the extent to which we can expect specific subgroups in the community to resist or support our approaches. Furthermore, neglecting the relational features of communities may also lead us to disregard important characteristics of communities that may be used to support health related interventions.

Public Policy

One of the defining characteristics of public health—apart from its emphasis on the health of populations rather than the health of individuals—is the use of regulatory policies, procedures, and laws to protect the health of the community.[126] This use of regulatory policies has had a dramatic effect on the health of the population. McKinlay and McKinlay, for example, have estimated that the most of the decline in mortality that occurred in the United States between 1900 and 1973 occurred as a result of improvements in water supply, sanitation, housing, and food quality,[127] including laws governing the pasturization of milk.[128]

The success of these policies in reducing death and disability from infectious diseases has led to the development of public policy approaches to address health risks from chronic diseases. These include: policies that restrict behaviors, such as prohibitions on smoking in public buildings and restrictions on alcohol sales and consumption;[129] policies which contain behavioral incentives, both positive and negative, such as increased taxes on cigarettes and alcohol;[130] policies which indirectly affect behaviors, such as reduced price supports for tobacco;[131] and policies that allocate programmatic resources, such as the Prevention Block Grants, establishment of health promotion centers in selected universities, and the establishment of health promotion offices and agencies in federal and state government. Policies may also affect access to health

promotion resources through the establishment of eligibility criteria, and the appropriateness of health promotion interventions by restrictions on how programmatic resources may be used. Examples include federal restrictions on adolescent pregnancy prevention programs and the use of AIDS money in the development of promotional materials.

There are several important roles for health promotion professionals in policy development, policy advocacy, and policy analysis.[132] Policy development activities may include increasing public awareness about specific health and policy issues, and educating the public about the policy development process. Public advocacy can take the form of encouraging citizen participation in the political process—including voting and lobbying, organizing coalitions to support health policy related issues, and monitoring policy implementation, at the federal state, and local level. A policy analysis role would include providing policy makers, the general public, and target populations with policy options and promoting public input into the policy making process.

There is an important link among these policy roles and the concepts of community discussed earlier. Policy development, public advocacy, and policy analysis have important implications for communities. Berger and Neuhaus[87] argue that public policies should be designed to strengthen, rather than weaken the voluntary associations which serve as mediating structures. As Milio[131] notes, "the task for public policy becomes one of creating environments—all of which have biotic and constructed socioeconomic and interpersonal facets—that are likely to elicit health responses for most people most of the time (page 4)." While Milio is generally speaking of the larger social environment, her statement also applies to the mediating structures in communities.

It is also important to recognize that mediating structures in a community serve as connections between individuals and the larger social environment. Mediating structures serve as points of access to, and influence on, the policy-making process. Thus, the task of health promotion professionals—whether in policy development, advocacy, or analysis—is to strengthen the ability of mediating structures to influence policy; thereby, strengthening the mediating structures and their ability to meet the needs of their members.

IMPLICATIONS OF AN ECOLOGICAL APPROACH

The preceding sections of this article have focused on identifying the need for and characteristics of an ecological perspective on health promotion, with brief examples to clarify each level of the ecological model. The purpose of an ecological model is to focus attention on the environmental causes of behavior and to identify environmental interventions. The six papers included in this theme issue provide in-depth reports on a variety of applications of ecological perspectives, addressing different health programs in a variety of settings. As we have noted, and as the authors of the subsequent articles make clear, recent examples of practice applications of ecological models do exist, although they do not dominate, the landscape of health promotion programs. Further, some of the differences between individually-focused and ecologically-focused health promotion strategies are subtle, the central differences being in underlying philosophies and specified targets of change.

Wallerstein and Bernstein[142] discuss the adaptation of Paulo Freire's ideas about empowerment education to health education, and present a case study of an Alcohol

and Substance Abuse Prevention (ASAP) program in New Mexico. Freire's ideas emphasize education as liberation, social action to promote participation of individuals, organizations, and communities; and gaining control over one's life and society. The ASAP program uses peer education, experiential learning through interviews with patients and jail residents, and adoption of active political and social roles in the community. The program aims at change at the institutional, public policy, and community levels as means to effect interpersonal and intrapersonal health related behaviors.

In a review of environmental interventions to promote healthy eating, Glanz and Mullis[3] describe an interdisciplinary perspective on voluntary, organizationally-based initiatives to reduce barriers to following healthier diets and creating opportunities for action on a *population-wide* basis. They discuss five distinct types of interventions, originating from various health and non-health sectors in society: changes in the food supply, point of choice nutrition information, collaboration with private sector food vendors, worksite nutrition policies and incentives, and changes in the structure of health and medical care related to nutrition. Each of these types of interventions can reach large segments of the population without imputing individual responsibility for poor eating habits or requiring attendance at traditional educational programs. These programs directly target several levels of an ecological model: institutional, public policy, community, and the physical environment.

Monahan and Scheirer[108] address the role of state health department dental offices as *linking agents* in the diffusion of fluoride mouth rinse programs (FMRPs) in public schools. They use a social ecology perspective to analyze the various levels affecting the use of linking agents. Their findings indicate that the state dental offices acted as pivotal interpersonal links in both program initiation and continuation, and that the linking agents' long term commitment promoted institutionalization of the school FMRPs.

Another article focusing on school health promotion examines the phases of change in a cardiovascular risk reduction program which integrates organizational change with student learning strategies. Parcel, Simons-Morton, and Kolbe[103] engaged the involvement of individuals and groups in the schools at all levels—students, teachers, administrators, and school district personnel—to facilitate adoption of broad-based health programs. They identified four key phases of change: institutional commitment, changes in policies and practices, changes in the roles and actions of staff, and finally, new learning activities. Thus, effective implementation of school health promotion programs requires active strategies to facilitate organizational adaptations to the innovation, and the support of providers and administrators to ensure institutionalization.[133]

The growth of workplace health promotion has been a key area which has stimulated critics of individually-oriented life-style change programs. In this issue, Robins and Klitzman[102] present a description and evaluation of a hazard communication program in one corporation with many local plants. They found that programs which were more effectively implemented and better rated by workers were more likely to stimulate changes in organizational and working conditions at the plants. They stress the importance of reaching people at all levels of decision making, and apply the ecological model to the workplace in terms of five levels of intervention: the worker, the work unit, the local plant, the corporation/institution, and society as a whole.

The concluding paper by Kathryn Green[100] addresses issues of responsibility for health and control of factors influencing health in the context of workplace health

programs. She presents a matrix dividing influences on worker health in terms of the extent of control by employers and workers, and then analyzes the responsibilities of parties involved in workers' health. The worker, union, employer, and government each bear responsibility for various areas of physical and psychosocial health. Such an ecological approach to workers' health will result in the use of a variety of change strategies and recognition of the limits of worker control over situational, regulatory, and societal factors.

These articles identify important issues in adopting an ecological perspective. First, several of the articles discuss the importance of environmental supports for delivering health promotion services. While some health promotion programs are short term—such as health fairs and some screening programs—developing environmental and organizational support is necessary for adequate program implementation and ultimate institutionalization.

Second, two of the articles discuss the use of environmental interventions to support individual behavior changes. These include changes in: the physical environment; organizational rules and regulations; and corporate culture. However, neither program attempted to address all levels of the model. Choices in where to intervene will be largely a function of program resources, the mission and goals of the host organization, and the theoretical model guiding the intervention. The importance of an ecological perspective is that it broadens our outlook to include environmental interventions that may support the behavior change process. This suggests the need to incorporate ecological models in our training programs, and to consider the development of specialty areas in health promotion practice.

Third, these articles identify the importance of evaluating health promotion programs at multiple levels. Since we know relatively little about how specific interventions may effect changes in organizational and community environments, and how these environmental changes may affect the initiation and maintenance of behavior changes on the part of individuals, an important aspect of health promotion program evaluation is to describe the change process.

A fourth issue raised by authors in this issue concerns placing sole responsibility for health on individuals by over-emphasizing the role of behavior in determining health. Even viewing behavior within an ecological perspective will not adequately address many of the sources of ill health, such as economic inequities, discrimination, genetics, toxic exposures in the environment, unemployment, etc., except as they effect behavior. While an ecological model could be used to identify environmental sources of ill health, the focus of the model as presented in this article is on environmental influences on behavior. The effectiveness of interventions using the model, then, will be limited by the extent to which behavior contributes to health or illness.

Perhaps the most critical issues in applying ecological approaches to behavior change are ethical ones. While strategies based on an ecological model tend to minimize the likelihood of victim blaming, they can result in charges of coercion.[134] Policy approaches, such as raising the taxes on cigarettes, or banning smoking in public spaces, may be viewed as restricting individual rights and freedoms. Corporate incentive programs for weight loss or smoking cessation may be subtly coercive when behavior change is viewed as linked to job retention, promotion, or salary increases. Social support interventions may also be coercive when interpersonal social influences are used to achieve behavioral changes. Even mass media approaches may be coercive when they are based on appeals to emotions, or manipulate information.[135] Such

approaches can also be viewed as a form of paternalism and are considered by some to be an invasion of privacy.[136]

An essential component of ecological strategies—in order to minimize the problems of coercion and, particularly, paternalism—is active involvement of the target population in problem definition, the selection of targets of change and appropriate interventions, implementation, and evaluation. The process of using ecological strategies, then, is one of consensus building.

By involving the target population in the description of the problem and its sources, important health education has already occurred.[137] As noted by Wallerstein and Bernstein in this issue of *Health Education Quarterly*, the process of planning and implementing programs also shapes our consciousness about the causes and responsibilities for health and illness, and may empower individuals and collectivities to address health related problems.

However, the active involvement of the individuals and groups affected by health promotion programs will not solve all of the problems associated with ecological strategies. In many cases, it may not be possible to build consensus among all of those affected, and in mass media campaigns, for example, it may not be clear who should be involved in the consensus-building process.

In some cases, it may not be necessary to ethically justify restriction of individual freedoms when the exercise of those freedoms imposes a clear harm to others. For example, exposure of non-smokers to sidestream smoke may impose a health threat. In the case of health threats, it is the responsibility of decision-makers to protect the health of non-smokers by restricting the behavior of smokers. In other cases, where the behavior of the individual has only direct effects on that individual, the ethical acceptability of using coercive strategies is much less clear.[138] For example, coercing individuals into participating in an exercise program may be ethically questioned. Some writers have suggested a communitarian ethic as a justification for ecological strategies to protect the public from voluntarily assumed risks to health.[139] Other writers have argued that many of the "voluntary" risks to health are not assumed voluntarily at all: rather social factors influence and determine the risks that individuals assume.[140] Thus the use of social interventions to offset prevailing social influences are both appropriate and ethical. In reality, not all ecological strategies are coercive, and the use of coercive strategies will ultimately be restrained by legal and social sanctions. The prevention of public resistance to ecological strategies will require educational approaches to, "Assure informed consent from the public, and to assure that individuals who are not ultimately protected by them are still in a position to protect themselves."[141]

Notes

1. For example, the *American Journal of Health Promotion, Health Promotion: An International Journal,* and *Corporate Commentary* are all devoted to health promotion issues.
2. For example, *Health Education Quarterly* has recently published theme issues on "Ethical Dilemmas in Health Promotion," 14(1), 1987, and "The Role of the Schools in Implementing the Nation's Health Objectives for the 1990's," 15(1), 1988, The *Canadian Journal of Public Health* recently published a "Special Health Promotion Issue," 77(6), 1988.

3. For example, the *Journal of Social Issues* recently devoted a theme issue to "Children's Injuries: Prevention and Public Policy." 43(2), 1987.
4. For example, the First International Conference on Health Promotion was held in Ottawa, Canada, November 17–21, 1986.
5. Similar issues have been raised within health education. See for example, Freudenberg, N.: "Shaping the Future of Health Education: From Behavior Change to Social Change." *Health Education Monographs*, 6(4): 372–377, 1978.
6. Reciprocal determinism is a component of many psychological models, such as Bandura's social learning theory. However, the sense of transactional models is that individuals and environments interact over time to jointly determine each other. This is distinct from some interactional models in which individuals and environments jointly contribute to behavior, such as those tested by analysis of variance or regression models.
7. Systems models, on the other hand, frequently use outcomes such as system functioning or production.
8. A network framework also suggests that we need to reconceptualize peer education models for preventing drug abuse. Clearly, peer educators should be selected based on their position within existing networks. Instead, many peer education programs rely on self-selected peers who may be peripheral to the existing networks within a school. Thus, we would expect the success of peer education programs to vary, depending upon the selection criteria for the peer educators.

References

1. Hamburg DA, Elliott GR, and Parron DL (eds.): *Health and Behavior: Frontiers of Research in the Biobehavioral Sciences,* Washington, D. C., National Academy Press, 1982.
2. Fielding J: "Health Promotion and Disease Prevention at the Worksite." In: Breslow L, Fielding J, and Lave LB (eds.): *Annual Review of Public Health: Volume 5,* Palo Alto, Annual Reviews, 1984.
3. Glanz K, and Mullis RM: "Environmental Interventions to Promote Healthy Eating: A Review of Models, Programs, and Evidence." *Health Education Quarterly,* 15(4), 1988.
4. Public Attitudes and Behavior Related to Exercise. New York, The Gallup Organization, February, 1985.
5. Roccella, EJ, and Ward, GW: "The National High Blood Pressure Education Program: A Description of Its Utility as a Generic Program Model." *Health Education Quarterly,* 11(3): 225–242, 1984.
6. Ernst, ND, Cleeman, J: "Reducing High Blood Cholesterol Levels: Recommendations from the National Cholesterol Education Program." *Journal of Nutrition Education,* 20: 23–29, 1988.
7. Blackburn H: "Research and Demonstration Projects in Community Cardiovascular Disease Prevention.: *Journal of Public Health Policy,* 4: 398–421, 1983.
8. Department of Health and Human Services, *The 1990 Objectives for the Nation: A Midcourse Review.* Public Health Service, Office of Disease Prevention and Health Promotion, November 1986, 253 pp.
9. Lalonde, M.: *A New Perspective on the Health of Canadians: A Working Document.* Health and Welfare Canada, 1974.
10. Knowles JH: "The Responsibility of the Individual." In: Knowles, J. (ed.): *Doing Better and Feeling Worse: Health in the United States.* New York, Norton. 1977.
11. U. S. Public Health Service: *Healthy People: The Surgeon General's Report on*

Health Promotion and Disease Prevention. U.S. DHEW, PHS Pub. No. 79-55071, 1979.

12. World Health Organization Regional Office for Europe: "Health Promotion: A Discussion Document on the Concept and Principles." Copenhagen, 1984.
13. Crawford R: "Individual Responsibility and Health Politics in the 1970s." In: S. Reverby and D. Rosner (eds.): *Health Care in America: Essays in Social History,* Philadelphia, Temple University Press, 1979.
14. Tesh S: "Disease Causality and Politics." *Journal of Health Politics, Policy and Law,* 6(3): 369-390, 1981.
15. Green LW: "Individuals vs. Systems: An Artificial Classification That Divides and Distorts." *HealthLink,* 2(3): 29-30, 1986.
16. Green LW, and McAlister AL: "Macro Intervention to Support Health Behavior: Some Theoretical Perspectives and Practical Reflections." *Health Education Quarterly,* 11:323-338, 1984.
17. Roberts MC: "Public Health and Health Psychology: Two Cats of Kilkenny?" *Professional Psychology: Research and Practice,* 18(2): 145-149, 1987.
18. U.S. Department of Health and Human Services: *National Survey of Worksite Health Promotion Activities: A Summary.* U. S. Department of Health and Human Services, Public Health Service, Office of Disease Prevention and Health Promotion, Summer 1987.
19. Walsh, D. C.: "Current Policies Regarding Smoking in the Workplace." *American Journal of Industrial Medicine,* 13(1), 1988.
20. Seidman E: "Unexamined Premises of Social Problem Solving." In: Seidman E (ed.): *Handbook of Social Intervention,* Beverly Hills, Sage, 1983.
21. Green LW: "Modifying and Developing Health Behavior," In: Breslow L, Fielding J, and Lave L (eds.): *Annual Review of Public Health, Vol. 5,* Palo Alto, Annual Reviews, 1984.
22. Sloan RP: "Workplace Health Promotion: A Commentary on the Evolution of a Paradigm." *Health Education Quarterly,* 14(2): 181-194, 1987.
23. Koop CE: Quoted in: "Koop Says Retribution Possible: Public May Lash Out Against AIDS Patients." Raleigh, North Carolina, The News and Observer, Saturday, July 23, 1988, 6A.
24. New York Times News Service: "Circle K to Drop AIDS Medical Coverage." Raleigh, North Carolina, The News and Observer, Sunday August 7, 1988, 15A.
25. Minkler M: "Health Promotion in Long-Term Care: A Contradiction in Terms?" *Health Education Quarterly,* 11(1): 77-90, 1984.
26. Minkler M: "Building Supportive Ties and Sense of Community Among the Inner-City Elderly: The Tenderloin Senior Outreach Project." *Health Education Quarterly,* 12(4): 303-314, 1985.
27. Brofenbrenner U: *The Ecology of Human Development.* Cambridge, Massachusetts, Harvard University Press, 1979.
28. Brofenbrenner U: "Toward an Experimental Ecology of Human Development." *American Psychologist,* 32: 513-531, 1977.
29. Pervin LA: "Performance and Satisfaction as a Function of Individual-Environment Fit." *Psychological Bulletin,* 69: 56-68, 1968.
30. Endler NS, and Magnusson D: "Personality and Person by Situation Interactions." In: Endler NS, and Magnusson D (eds.): *Interactional Psychology and Personality,* 1-26, New York, John Wiley and Sons, 1976.
31. Belsky J: "Child Maltreatment: An Ecological Integration." *American Psychologist,* 34(4); 320-335, 1980.
32. Margolis LH, McLeroy KR, Runyan CW, and Kaplan BH: "Type A Behavior: An Ecological Approach." *Journal of Behavioral Medicine,* 6(3): 245-257, 1983.

33. Winett RA: "Ecobehavioral Assessment in Health Life-Styles: Concepts and Methods." In: Karoly P. (ed.): *Measurement Strategies in Health Psychology,* New York, John Wiley and Sons, 1985.
34. Jackson T: "On the Limitations of Health Promotion." *Community Health Studies,* 9(1): 1–9, 1985.
35. Seidman E: "Back to the Future, Community Psychology: Unfolding a Theory of Social Intervention." *American Journal of Community Psychology,* 16(1): 3–24, 1988.
36. Kersell MW, and Milsum JH: "A Systems Model of Health Behavior Change." *Behavioral Science,* 30:119–126, 1985.
37. MacMahon B, and Pugh TF: *Epidemiology: Principles and Methods.* Boston, Little Brown, 1970.
38. Teris M: "Epidemiology and the Public Health Movement." *Journal of Public Health Policy,* 8(3): 315–329, 1987.
39. Eng E, Hatch J, and Callan A: "Institutionalizing Social Support through the Church and into the Community." *Health Education Quarterly,* 12(1): 81–92, 1985.
40. Janz NK, and Becker, MH: "The Health Belief Model: A Decade Later." *Health Education Quarterly,* 11(1): 1–48, 1984.
41. Fishbein M: "A Theory of Reasoned Action: Some Applications and Implications." In: *1979 Nebraska Symposium on Motivation,* Lincoln, University of Nebraska Press, Lincoln, 1980.
42. Bandura A: *Social Foundations of Thought and Action: A Social Cognitive Theory,* Englewood Cliffs, New Jersey, Prentice-Hall, 1986.
43. Strecher VJ, Devellis, BM, Becker, MH, and Rosenstock, IM: "The Role of Self-Efficacy in Achieving Health Behavior Change." *Health Education Quarterly,* 13 (1): 73–92, 1986.
44. Wallston KA, and Wallston, BS: "Who is Responsible for Your Health? The Construct of Health Locus of Control." In: Sanders GS, and Suls J (eds.): *Social Psychology of Health and Illness,* Hillsdale, New Jersey, Lawrence Erlbaum, 1982.
45. Langer EJ: *The Psychology of Control,* Beverly Hills, Sage, 1983.
46. Lazarus RS, and Folkman S: *Stress, Appraisal, and Coping,* New York, Springer, 1984.
47. Eiser JR: "Addiction as Attribution: Cognitive Processes in Giving Up Smoking." In: Eiser JR (ed.): *Social Psychology and Behavioral Medicine,* New York, John Wiley, 1982.
48. Carver CS, and Humphries C: "Social Psychology of the Type-A Coronary Prone Behavior Pattern." In: Sanders GS, and Suls J (eds.): *Social Psychology of Health and Illness,* Hillsdale, New Jersey, Lawrence Erlbaum, 1982.
49. Kobasa SC: "The Hardy Personality: Toward a Social Psychology of Stress and Health." In: Sanders GS, and Suls J (eds.): *Social Psychology of Health and Illness,* Hillsdale, New Jersey, Lawrence Erlbaum, 1982.
50. Janis IL: "The Patient as Decision Maker." In: Gentry WD (ed.): *Handbook of Behavioral Medicine,* New York, Guilford Press, 1984.
51. Geller E: "Rewarding Safety Belt Use at an Industrial Setting: Test of Treatment Generality and Response Maintenance." *Journal of Applied Behavior Analysis* 16(2): 189–202, 1983.
52. Simons-Morton BG: "Effectiveness and Cost Effectiveness of Persuasive Communications and Incentives in Increasing Safety Belt Use." *Health Education Quarterly,* 14(2): 167–179, 1987.
53. Lichtenstein E: "The Smoking Problem: A Behavioral Perspective." *Journal of Consulting and Clinical Psychology,* 50(6): 804–819, 1982.

54. Dielman TE, Campanelli PC, Shope JT, and Butchart AT: "Susceptibility to Peer Pressure, Self-Esteem, and Health Locus of Control as Correlates of Adolescent Substance Abuse." *Health Education Quarterly*, 14(2): 201–224, 1987.
55. Hansen WB, Malotte CK, and Fielding JE: "Evaluation of a Tobacco and Alcohol Abuse Prevention Curriculum for Adolescents." *Health Education Quarterly*, 15(1): 93–114, 1988.
56. Elder JP, and Stern RA: "The ABCs of Adolescent Smoking Prevention: An Environment and Skills Model." *Health Education Quarterly*, 13(2): 181–191, 1986.
57. Steckler AB: Book review of: *Implementing Change in Communities: A Collaborative Process, Health Education Quarterly*, 12(2): 215–218, 1985.
58. McKinlay JB: "Social Network Influences on Morbid Episodes and the Career of Help Seeking." In: Eisenberg L, and Kleinman A (eds.): *The Relevance of Social Science for Medicine*, Boston, D. Reidel, 1971.
59. Gore S: "Social Support and Styles of Coping with Stress." In: Cohen S, and Syme SL (eds.): *Social Support and Health*, New York, Academic Press, 1985.
60. Kaplan HB, Martin SS, and Robbins C: "Pathways to Adolescent Drug Use: Self-Derogation, Peer Influence, Weakening of Social Controls, and Early Substance Use." *Journal of Health and Social Behavior*, 25(3): 270–288, 1984.
61. Walter AR: "The Mediating Role of Social Networks in the Housing Decisions of the Elderly." In: Peterson WA, and Quadagno J (eds.): *Social Bonds in Later Life: Aging and Interdependence*, Beverly Hills, Sage, 1985.
62. Langlie J: "Social Networks, Health Beliefs, and Preventive Behavior." *Journal of Health and Social Behavior*, 18: 244–260, 1977.
63. Kessler RC, and McLeod JD: "Social Support and Mental Health in Community Samples." In: Cohen S, and Syme SL (eds.): *Social Support and Health*, New York, Academic Press, 1985.
64. Hofferth SL: "Contraceptive Decision-Making Among Adolescents." In: National Academy of Sciences, *Risking the Future: Adolescent Sexuality, Pregnancy and Childbearing, Working Papers*. Washington, D. C., National Academy Press, 1987.
65. Barrera M Jr.: "Social Support in the Adjustment of Pregnant Adolescents: Assessment Issues." In: Gottlieb B (ed.): *Social Networks and Social Support*, Beverly Hills, Sage, 1981.
66. Erickson BH: "Networks, Ideologies, and Belief Systems." In: Marsden PV, and Lin N (eds.): *Social Structure and Network Analysis*, Beverly Hills, Sage, 1982.
67. Berkman L, and Syme S: "Social Networks, Host Resistance, and Mortality: A Nine-Year Follow Up Study of Alameda County Residents." *American Journal of Epidemiology*, 109: 186–204, 1979.
68. Israel BA: "Social Networks and Health Status: Linking Theory, Research, and Practice." *Patient Counseling and Health Education*, 4(2), 1982.
69. Wills TA: "Supportive Functions of Interpersonal Relationships." In: Cohen S and Syme SL (eds.): *Social Support and Health*, New York, Academic Press, 1985.
70. Donald CA, Ware JE, Jr, Brook RH, and Davies-Avery A: *Conceptualization and Measurement of Health for Adults in the Health Insurance Study: IV. Social Health*. Pub. R-1987/4-HEW, Santa Monica, Rand, 1979.
71. Sussman S: "Two Social Influence Perspectives of Tobacco Use Development and Prevention." *Health Education Research: Theory and Practice*, in press.
72. Castro FG, Maddahian E, Newcomb MD, and Bentler PM: "A Multivariate Model of the Determinants of Cigarette Smoking Among Adolescents." *Journal of Health and Social Behavior*, 28(3): 273–289, 1987.
73. Hall A, and Wellman B: "Social Networks and Social Support." In: Cohen S, and Syme S (eds.): *Social Support and Health*, New York, Academic Press, 1985.

74. Gottfredson GD: "Peer Group Interventions to Reduce the Risk of Delinquent Behavior: A Selective Review and a New Evaluation." *Criminology,* 25(3), 1987.
75. Cairns RB, Cairns BD, Neckerman HJ, Gest S, and Gariepy JL: "Peer Networks and Aggressive Behavior: Social Support of Social Rejection." Report from the Social Development Laboratory, 1(8), Department of Psychology, University of North Carolina at Chapel Hill, 1987.
76. Mosbach P, and Leventhal H: "Peer Group Identification and Smoking: Implications for Intervention." *Journal of Abnormal Psychology,* 97(2), 1988.
77. Wellman B; "Network Analysis: Some Basic Principles." In: R. Collins (ed.): *Sociological Theory 1983,* San Francisco, Jossey-Bass, 1983.
78. McLeroy KR, and Weber L: "A Lay Advisor Approach to the Prevention of Adolescent Pregnancy." Unpublished Manuscript, University of North Carolina at Greensboro, 1987.
79. Foss RD: "Sociocultural Perspectives on Child Occupant Protection." *Pediatrics,* 80(6): 886–893, 1987.
80. Rogers EM: "The Diffusion of Innovations Perspective." In: Weinstein N (ed.), *Taking Care: Why People Take Precautions,* New York, Cambridge University Press, 1987.
81. Billy JOG, Rodgers JL, and Udry JR: "Adolescent Sexual Behavior and Friendship Choice." *Social Forces,* 62: 653–678, 1984.
82. Billy JOG, and Udry JR: "The Influence of Male and Female Best Friends on Adolescent Sexual Behavior." *Adolescence,* 20:21–31, 1986.
83. Hofferth SL: "Factors Affecting Initiation of Sexual Intercourse." In: National Academy of Sciences, *Risking the Future: Adolescent Sexuality, Pregnancy and Childbearing: Working Papers.* Washington, D. C., National Academy Press, 1987.
84. Tracy EM, and Whittaker JK: "The Evidence Base for Social Support Interventions in Child and Family Practice: Emerging Issues for Research and Practice." *Children and Youth Services Review,* 9: 249–270, 1987.
85. Holt RR: "Occupational Stress." In: Goldberger L, and Breznitz S (eds.): *Handbook of Stress: Theoretical and Clinical Aspects,* New York, Free Press, 1982.
86. Van Maanen J, and Barley SR: "Organizational Culture: Fragments of a Theory." In Frost PJ, Moore LF, Louis MR, Lundberg CC, and Martin J (eds.): *Organizational Culture,* Beverly Hills, Sage, 1985.
87. Berger PL, and Neuhaus RC: *To Empower People: The Role of Mediating Structures in Public Policy.* Washington, D.C., American Enterprise Institute for Public Policy Research, 1977.
88. Nathan PE: "The Worksite as a Setting for Health Promotion and Positive Lifestyle Change." In: Matarazzo JD, Weiss SM, Herd JA, Miller NE, and S. Weiss M (eds.): *Behavioral Health: A Handbook of Health Enhancement and Disease Prevention,* New York, Wiley, 1984.
89. Brownell KD, and Felix MRJ: "Competitions to Facilitate Health Promotion: Review and Conceptual Analysis." *American Journal of Health Promotion, in press.*
90 Abrams DB, and Follick MJ: "Behavioral Weight-Loss Intervention at the Worksite: Feasibility and Maintenance." *Journal of Consulting and Clinical Psychology,* 51: 226–233, 1983.
91. Shepard DS, and Pearlman LA: *Incentive-Based Programs for Health Promotion in the Workplace.* Boston, Harvard University, Center for the Analysis of Health Practices, 1983.
92. Brownell KD, Cohen RY, Stunkard AJ, Felix MRJ, and Cooley NB: "Weight Loss Competitions at the Worksite: Impact on Weight, Morale, and Cost Effectiveness." *American Journal of Public Health,* 74: 1283–1285, 1984.

93. Eriksen MP: "Workplace Smoking Control: Rationale and Approaches." *Advances in Health Education And Promotion,* 1: 65-163, 1986.
94. Geller ES: *Corporate Incentives for Promoting Safety Belt Use: Rationale, Guidelines, and Examples.* National Highway Traffic Safety Administration, U.S. Department of Transportation, Final Report DOT HS 806-142, 1982.
95. McLeroy KR, Green LW, Mullen KD, and Foshee V: "Assessing the Effects of Health Promotion in Worksites: A Review of the Stress Program Evaluations." *Health Education Quarterly,* 11(4): 379-402.
96. Walsh DC, and McDougall V: "Current Policies Regarding Smoking in the Workplace." *American Journal of Industrial Medicine,* 13: 181-190, 1988.
97. Hollander RB, and Lengermann JJ: "Corporate Characteristics and Worksite Health Promotion Programs: Survey Findings from Fortune 500 Companies." *Social Science and Medicine,* 26(5): 491-501, 1988.
98. Jackson SE: "Participation in Decision Making as a Strategy for Reducing Job-Related Strain." *Journal of Applied Psychology,* 68(1): 3-19, 1983.
99. Shain M, Suurvali H, and Boutilier M: *Healthier Workers: Health Promotion and Employee Assistance Programs.* Lexington, Massachusetts, Lexington Books, 1986.
100. Green KL: "Issues of Control and Responsibility in Workers' Health." *Health Education Quarterly,* 15(4), 1988.
101. Nathan PE: "Johnson and Johnson's Live for Life: A Comprehensive Positive Lifestyle Change Program." In: Matarazzo JD, et al., *Behavioral Health: A Handbook of Health Enhancement and Disease Prevention,* New York, Wiley 1984.
102. Robins TG, and Klitzman S: "Hazard Communication in a Large U. S. Manufacturing Firm: The Ecology of Health Education in the Workplace." *Health Education Quarterly,* 15(4), 1988.
103. Parcel GS, Simons-Morton BG, and Kolbe LJ: "School Health Promotion: Integrating Organizational Change and Student Learning Strategies." *Health Education Quarterly,* 15(4), 1988.
104. Ottoson JM, and Green LW: "Reconciling Concept and Context: Theory of Implementation." In: Ward WB (ed.): *Advances in Health Education and Promotion,* Greenwich, Connecticut, JAI Press, Vol. 2, 1987.
105. Goodman RM: *Factors Affecting the Long-Term Viability of Health Promotion Programs: An Institutionalization Perspective.* Doctoral Dissertation, Department of Health Education, University of North Carolina at Chapel Hill, 1987.
106. Goodman RM, and Steckler AB: "The Life and Death of a Health Promotion Program: An Institutionalization Case Study." *International Quarterly of Community Health Education,* 8(1), 5-21, 1987.
107. Basch CE: "Research on Disseminating and Implementing Health Education Programs in Schools." *Journal of School Health,* 54: 57-66, 1984.
108. Monahan JL, and Scheirer MA: "The Role of Linking Agents in the Diffusion of Health Promotion Programs." *Health Education Quarterly,* 15(4), 1988.
109. Nisbet RA: *The Sociological Tradition,* New York, Basic Books, 1966.
110. Beauchamp DE: "Community: The Neglected Tradition of Public Health." *Hastings Center Report,* December, 1985, 28-36.
111. Newbrough JR, and Chavis DM: "Psychological Sense of Community, I: Foreword." *Journal of Community Psychology,* 14: 3-5, 1986.
112. Long NE: "The City as a Political Community." *Journal of Community Psychology,* 14: 72-80, 1986.
113. Cox FM: "Alternative Conceptions of Community: Implications for Community

Organization Practice." In: Cox FM, Erlich JL, Rothman J., and Tropman JE (eds.): *Strategies of Community Organization*, Itasca, Illinois, Peacock, 1979.

114. Hunter A: *Symbolic Communities: The Persistence and Change of Chicago's Local Communities.* Chicago, University of Chicago Press. 1974.
115. Hunter F: *Community Power Structures*, Chapel Hill, University of North Carolina Press, 1953.
116. Dahl RA: *Who Governs? Democracy and Power in an American Community*, New Haven, Yale University Press, 1973.
117. Lasater TM, Wells BL, Carleton RA, and Elder JP: "The Role of Churches in Disease Prevention Research Studies." *Public Health Reports*, 101(2): 125–130, 1986.
118. Hasenfeld Y, and Tropman JE: "Interorganizational Relations: Implications for Community Organizers and Community Organizations." In: Cox FM, Erlich JL, Rothman J, and Tropman JE (eds.): *Strategies of Community Organization*, Itasca, New York, Peacock, 1979.
119. Callahan, JJ: "Delivery of Services to Persons with Long-Term-Care Needs." In: Meltzer J, Farrow F, and Richman H (eds.): *Policy Options in Long-Term Care*, Chicago, University of Chicago Press, 1981.
120. Winder AE: "The Mouse That Roared: A Case History of Community Organization for Health Practice." *Health Education Quarterly*, 12(3): 353–363, 1985.
121. DeFrank RS, and Levenson PM: "Ethical and Philosophical Issues in Developing a Health Promotion Consortium." *Health Eduation Quarterly*, 14(1): 71–78 1987.
122. Freudenberg N, and Golub M: "Health Education, Public Policy and Disease Prevention: A Case History of the New York City Coalition to End Lead Poisoning." *Health Education Quarterly*, 14(4): 387–401, 1987.
123. Brown LD: "Small Interventions for Large Problems: Reshaping Urban Leadership Networks." *Journal of Applied Behavioral Science*, 23(2), 1987.
124. Steckler A, and Dawson L: "Determinants of Consumer Influence in an HSA." *Health Education Quarterly*, 16(4): 378–393, 1978.
125. Minkler M: "Ethical Issues in Community Organization." *Health Education Monographs*, 6(2): 198–209, 1978.
126. Runyan CW, DeVellis RF, De Vellis BE, and Hochbaum GM: "Health Psychology and the Public Health Perspective: In Search of the Pump Handle." *Health Psychology*, 1(2): 169–180, 1982.
127. McKinlay JB, and McKinlay SM: "Medical Measures and the Decline of Mortality." *Milbank Memorial Fund Quarterly/Health and Society*, Summer, 1977, 405–428.
128. Pawluch D: "Transitions in Pediatrics: A Segmental Analysis." In: Conrad P, and Kern R (eds.): *The Sociology of Health and Illness: Critical Perspectives*, New York, St. Martin's Press, 1886.
129. Rabow J, and Watts RK: "Alcohol Availability, Alcoholic Beverage Sales and Alcohol-Related Problems." *Journal of Studies on Alcohol*, 43(7): 767–801, 1982.
130. Godfrey C, and Powell M: "Alcohol and Tobacco Taxation: Barriers to a Public Health Perspective." *The Quarterly Journal of Social Affairs*, 1(4): 329–353, 1985.
131. Milio N: *Promoting Health Through Public Policy*, Ottawa, Canada, Canadian Public Health Association, 1986.
132. Steckler A, Dawson L, Goodman RN, and Epstein N: "Policy Advocacy: Three Emerging Roles for Health Education." In: Ward WB (ed.): *Advances in Health Education and Promotion*, Volume 2, Greenwich, Connecticut, JAI Press, 1987.

133. Huberman AM, and Miles MB: *Innovation Up Close: How School Improvement Works.* New York, Plenum, 1984.
134. McLeroy KR, Gottlieb NH, and Burdine JN: "The Business of Health Promotion: Ethical Issues and Professional Responsibilities." *Health Education Quarterly,* 14(1): 91-110, 1987.
135. Faden RR: "Ethical Issues in Government Sponsored Public Health Campaigns." *Health Education Quarterly,* 14(1): 27-38, 1987.
136. Crocker EM: "Controlling Smoking in the Workplace." *Labor Law Journal,* 38 (12): 739-746, 1987.
137. Walker RA, and Bibeau DL: "Health Education as Freeing—Part II." *Health Education,* 16(6): 4-8, 1986.
138. Wikler D: "Who Should Be Blamed for Being Sick." *Health Education Quarterly,* 14(1): 11-25, 1987.
139. Forster JL: "A Communitarian Ethical Model for Public Health Interventions: An Alternative to Individual Behavior Change Strategies." *Journal of Public Health Policy,* June 1982: 150-163.
140. Beauchamp DE: "Public Health as Social Justice." *Inquiry,* 13: 3-14, 1976.
141. Green LW: "Letter to the Editor." *Health Education Quarterly,* 14(1): 3-5, 1987.
142. Wallerstein N, and Bernstein E: Empowerment Education: Freire's Ideas Adapted to Health Education. *Health Education Quarterly* 15(4): 1988.