

## CHAPTER

# 4

## Behavioral and Social Science Theory

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**A** *theory* is a set of interrelated concepts, constructs, and propositions that present a systematic view of a domain of study for the purpose of explaining and predicting phenomena. A *model*, on the other hand, is a heuristic device for organizing components of a domain of phenomena to show relationships between the parts and the outcome of interest. Scholars from different disciplines distinguish between theories and conceptual models in contrasting ways; however, common distinctions emphasize the degree of generality, formalization, coherence, and causality involved. Theories tend to encompass broad classes of phenomena, while models are applied to more narrowly defined domains, have less formalization, and make more tentative claims about causality. For example, the social ecology of health model draws on general systems and social science theories, but it is a model and not a theory. It organizes component factors according to levels of influence on health and uses the heuristic device of the iceberg-type figure to depict the relationship between deep structural factors, intermediate factors, and individual factors. Different theories can be used to explain phenomena at different ecological levels, a topic to which we will return later in this chapter.

Public health professionals who work in areas unrelated to the social and behavioral sciences often become overwhelmed by the multiplicity of theoretical and conceptual “models” that are found in the behavioral science literature. Many of the frameworks and the constructs they contain appear very similar but go by different names, and the component concepts seem

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vague, abstract, and difficult to grasp. Some are called “theories” but seem more like models, while others are called “models” but seem more like simply a list of concepts or variables shown to influence health.

Habituated to a work environment that emphasizes “hard evidence” and “facts,” public health professionals in technical fields often muddle their way through this abstract conceptual territory, searching for clear anchors on which to hang the many theoretical constructs. In this chapter, we aim to provide a roadmap to behavioral and social science theory that may help simplify and clarify the complexity and help those who come from a non-social science background to understand the role of social and behavioral theory in public health research and practice.

## THEORETICAL TRADITIONS IN PUBLIC HEALTH

In Chapter 1, we discussed the history of behavioral and social science contributions to public health, including the emergence of social perspectives in the 19th century and the accelerated growth of a sociobehavioral paradigm in the second half of the 20th century. We noted the importance of theoretical and conceptual advances during the latter period, which shifted the focus of research and practice to sociocultural context and behavioral underpinnings of public health problems. In this chapter, we describe some of the most important theoretical contributions to this shift in greater depth and discuss how they offer tools for understanding the complex etiology of health problems in today’s world and translate into different approaches to problem amelioration. These can be grouped into four broad categories: (1) *social ecology*, (2) *health promotion*, (3) *interpretive studies*, and (4) *critical perspectives*. Next, we examine selected key concepts that have gained prominence in the field, giving examples of their application and usefulness in public health work. The third section presents an overview of selected theories and models according to the different levels of social ecological systems.

### Social Ecology

The social ecology of health model serves as the organizing framework of this book. The model is rooted in the traditional public health model of host-agent-environment, which was developed to study the relationship between human populations (host), disease pathogens (agent), and the physical setting (environment) in which people live and work. For instance, the transmission of waterborne illnesses can be studied in terms of the relationship between a human (host) exposed to a disease-causing pathogen (agent) through the use of a contaminated water source (environment). The traditional public health model can be contrasted with the traditional biomedical model, which assumes that illness can be explained by the presence of pathogens in the body (germ theory of disease) and abnormal physiological processes or biochemical imbalances. The biomedical model accords only a minor role to psychological and social processes, and it views mental and social phenomena as largely independent of biological processes (mind-body dualism). The social ecology of health model expands the traditional

public health model to incorporate aspects of the *social environment* as fundamental contributors to health problems.

## Health Promotion

Theoretical approaches to health promotion have tended to rely on social psychological models of behavior change. These models seek to identify determinants and pathways of influence for health-related behaviors, such as diet and exercise, smoking, safe-sex practices, contraceptive use, and screening behavior. Some of the most widely used approaches among these are the theory of reasoned action, later modified as the theory of planned behavior (Ajzen, 2002); social learning theory, later renamed social cognitive theory (Bandura, 2001); and the transtheoretical model, based on the stages of change construct (Prochaska, DiClemente, & Norcross, 1992). What the various models have in common is the focus on individual behavior change to improve health through the adoption of health-enhancing practices, such as smoking cessation, contraceptive use, and mammography screening. A key construct that emerged through various applications and elaborations of these models is the notion of *self-efficacy*, the degree to which an individual feels competent to perform a health practice. Originally proposed as part of social cognitive theory (Bandura, 1977), the construct proved to be a strong predictor of behavior that required sustained lifestyle change. Thus, this notion was incorporated into the expanded health belief model, the theory of planned behavior (recast as “perceived behavioral control”), and the transtheoretical model (see below).

## Interpretive Studies

Several strands of theoretical development across disciplines can be subsumed under the interpretive studies rubric. In anthropology, it includes cognitive approaches to illness, such as the study of explanatory models of illness (Kleinman, 1978), and cultural consensus analysis (Romney, Weller, & Batchelder, 1986). Related sociological perspectives include social constructionism (Berger & Luckmann, 1967) and symbolic interactionism (Blumer, 1969). In psychology, relevant examples include self-regulatory models of illness and the notion of illness representations (Leventhal, Brissette, & Leventhal, 2003) as well as attribution theory for explaining beliefs about illness causation. The common denominator of these approaches is a focus on subjective, perceptual, and cognitive dimensions of illness. It is assumed that meanings are neither “correct” nor fixed but are constructed or negotiated through cognitive, social, and cultural filtering. Anthropological distinctions between the concepts of *emic* and *etic*, and illness and disease are relevant here. *Emic* refers to the insider’s view (e.g., the patient’s subjective experience of illness) and *etic* to the objective view of outsiders (e.g., the health care provider’s and biomedical understanding). In recent years and across disciplines, increased attention has been given to illness “narratives,” that is, the ways in which people weave their illness experiences into stories incorporating events and themes from related aspects of their lives (Hurwitz, Greenhalgh, & Skultans, 2004). Qualitative studies of illness narratives reveal the nuanced meanings that people assign to the process of becoming sick,

including understanding its ramifications, coping with the adaptations required, and negotiating the health care system as they seek help in its management. For example, narratives of breast cancer survivors often invoke themes of empowerment, personal growth, and the significance of a new life journey.

## Critical Perspectives

Critical perspectives are those that challenge the dominant paradigms of public health practice and argue for alternative approaches to improving the health of populations. They can be grouped into at least two general categories: those that fault the political-economic organization of health systems and those influenced by postmodern perspectives on the role of the state and regulatory practices in producing healthy citizens. The first school of critical theory has historical roots in Marxist theory, critiques of capitalism, and the emergence of the medical-industrial complex (Navarro, 1986). This tradition traces the causes of health inequalities to broad social structural arrangements, such as global systems of trade and neocolonial domination of less developed countries by economic power elites. Likewise, health disparities are attributed to the deleterious effects of the market economy on health issues. Examples include critiques of the disproportionate distribution of the global burden of disease across different regions of the world. Ethical critiques about unequal availability of life-saving drugs would also fit into this category. An example within the United States would be the explanation of health inequalities across racial and ethnic groups in terms of economic structures, racism, and discrimination. Feminist perspectives on the health status of women would also fall within this genre.

The second category of critical perspectives emerged more recently within the post-structuralist paradigm, which analyzes social problems from a constructivist perspective, giving primacy to how we frame health-related issues and how this leads to various control strategies. For example, in modern industrial societies, the state has assumed an increasingly larger role in health surveillance and monitoring, constantly urging the populace to adopt healthy lifestyles and conform to the regimes of a healthy citizenship (Petersen & Lupton, 1996) in the pursuit of “perfect health” (Hours, 2001). Threats to public health are constructed as emanating from the unhealthy “other,” such as immigrant groups, and “risks” are seen as ubiquitous and constant; therefore, citizens must remain continually vigilant. The latter tradition includes critiques of the “riskfactorology” approach to public health thinking as a misguided oversimplification of problems that produces a false sense of security and control (McKinlay & Marceau, 2000).

Critical theorists have challenged ecological models for accepting the status quo of the social context and for failing to challenge the unequal distribution of resources across groups. In an attempt to integrate critical and ecological perspectives, some theorists have developed synthetic models that incorporate aspects of both traditions. For example, the ecosocial model (Krieger, 1994, 2001) attempts to link a social production of disease perspective with the multilevel framework of social ecology. It focuses on patterns of inequalities in health across the ecological levels of biological processes, the individual, family systems, community, populations,

society, and global systems. It also incorporates the notion of embodiment, that is, how social inequalities are expressed through biological processes. Others have advocated for the development of similar synthetic models along the lines of a “critical ecological perspective” (Leatherman, 2005).

## KEY CONCEPTS

### Knowledge and Attitudes

In terms of sheer volume, the bulk of social science research and practice has centered on cognitive factors related to health and illness. There are a number of reasons for this. First, the most accessible, simple, and least costly variables to measure are cognitive; perceptions, attributions, attitudes, and knowledge can be studied through survey and interview techniques as opposed to more time-consuming and labor-intensive methods such as behavioral observation. Second, until recently, the prevailing paradigm for social research assumed that the most important obstacles to program success resided in the minds and dispositions of the target audience. Hence, the goal was to uncover faulty understandings so that correct information could be provided, thereby leading to more enlightened behavior. Third, psychological theories have strongly influenced research in this field, and anthropological approaches have also emphasized cultural beliefs as central. The combination of these influences has created a huge body of literature on cognitive factors in health. Some of the key concepts have been previously touched on, such as basic health beliefs and attitudes, explanatory models of illness, and illness representations. Related concepts that have received particular attention include locus of control (e.g., internal vs. external to the individual), self-efficacy (perceived ability to successfully execute), expectancies (anticipated outcomes), and intentions (anticipated action). However, along with the volume of research on cognitive factors has come the recognition that beliefs often do not lead to behavior and it is necessary to study behavior itself as well as its varied influences.

### Health Behavior

The attention accorded to behavior change models in the field of health promotion has stimulated the development of quite a few concepts and methods for the toolkit of the behavioral scientist. To begin with, considerable attention has been accorded to the development of reliable and valid measures of specific health behaviors, such as the use of alcohol, tobacco and drugs, injury prevention practices, food consumption, physical activity, and sexual behavior. Likewise, precision has been introduced for measuring frequency, intensity, salience, and other dimensions. Health behavior has also been conceptualized according to different stages, such as initiation, maintenance, and relapse, as well as positive versus negative behavior, such as adoption or acceptance versus cessation or refusal. The field of health behavior research has incorporated principles and techniques of testing and measurement to a notable degree, and it is common for researchers to use standardized instruments, structured

scales, quantitative indices, and similar tools. In addition, many analyses use secondary data sources, such as the periodic surveys sponsored by the National Center for Health Statistics. The reliance on specific indicators has come to be described as the “risk factor approach” to health behavior. Even when study designs include higher-level influences, such as social structural and cultural variables, the focus is on “predicting” specific health behaviors by showing a statistical association with structural risk factors. This orientation is favored among researchers from a social psychological and health education background. In contrast, anthropological and sociological research accords greater attention to understanding the sociocultural context in and of itself.

## Culture

The concept of culture refers to shared patterns of thought and behavior that characterize a social group, which are learned through socialization processes and endure through time. As will be discussed in Chapter 8, cultural concepts can be applied to different kinds of social groups including families, communities, ethnic groups, organizations and societies. Culture can also be studied in terms of cultural domains such as diet, child rearing, or health. In public health research and practice, culture is often treated as a contextual variable influencing health-related behavior and outcomes. The concepts of ethnicity, and to a lesser extent race, are often used as proxy variables for cultural background (see Chapter 9). In addition, acculturation, or the degree to which a minority group has adopted the culture of the majority group, is often taken into account in research studies. Processes of culture change have received attention in analyzing the impact of interventions such as applications of the diffusion of innovation theory, discussed in a later section of this chapter. Finally, the notion of cultural competence, or the ability of health care providers to deliver culturally appropriate services to members of different ethnic and linguistic groups, has figured importantly in public health programs (see Chapter 9).

In research on health, cultural concepts have focused on analytic and linguistic categories for understanding the illness process and health behavior. Anthropologists make the distinction between *disease* and *illness*, with disease referring to the physiological pathology associated with a biomedically defined diagnosis and illness describing the complex biopsychosocial experience of feeling sick or unwell. Research has shown that while medical practitioners focus primarily on treating disease, patients often respond to their conditions in terms of different perceptions of the illness process. Related concepts include the distinction between *emic* and *etic* beliefs about health conditions, where emic beliefs are specific to a particular cultural group (the “insider” perspective) and etic beliefs derive from some external standard (e.g., the International Classification of Diseases). Patient explanatory models of illness focus on emic perceptions of the causes, consequences, and appropriate treatment for specific illness episodes. Cultural models of illness, on the other hand, refer to shared understandings, or shared explanatory models, for locally recognized illness categories. In Chapter 8, we discuss the concept of cultural model in greater depth and provide examples of its application to health-related problems.

## Social Environment

A large body of literature has accumulated relating to social environmental factors and health, including the effects of social stress, social support, social networks, and social capital. Beginning in the 1970s, researchers took a serious interest in the health effects of stress, and over the decades, the weight of evidence has shown conclusively that stress affects not only chronic disease but also almost every health condition imaginable. Early studies of stress investigated the impact of major life events such as bereavement, divorce, and loss of job on morbidity and mortality (Lazarus & Folkman, 1984). Subsequent studies expanded this line of inquiry to include “daily hassles,” job-related stress (see also Chapter 21), and other, more day-to-day kinds of stress, developing various instruments to measure the varieties of stress. Concomitantly, researchers also began to investigate the health protective benefits of social support and social networks (Berkman, Glass, & Brissette, 2000). Often studies of social support investigated its mitigating effects on the impact of stress, developing alternative hypotheses about whether social support operated directly on a health outcome or whether its protective effects occurred primarily because it buffered the negative impact of stress. The literature on social support identifies at least four major types of support: (1) emotional, (2) instrumental, (3) informational, and (4) appraisal. Other related concepts include direct and indirect support and formal and informal support. Studies attempted to identify the variable impact of different kinds of support on particular health outcomes.

A related line of research focuses on the concept of social networks, that is, the connections people have through relationships with others. Researchers have furthered the development of various measures of social integration and isolation, including network structure (size, density, and dispersion of linkages), and the relational content of support such as sources, types of demands, conflicts, role expectations, and social regulation of behavior. An important milestone study in this genre came out of the previously mentioned Alameda County Study, which documented prospectively the significant positive impact of social connectedness (Berkman & Syme, 1979; House, Robbins, & Metzner, 1982). Similar findings have been documented in other studies in the United States and Europe. More complex research designs have further documented the differential impact that social integration and social support have on subgroups in the population, such as comparing men and women and rural and urban dwellers. As the health effects of social support became well established, researchers shifted their attention to better understanding the biopsychosocial processes that mediate the association with health (see Chapter 6).

In recent years, social epidemiologic studies have focused on the concepts of social capital and collective efficacy as explanatory variables in population-level health. Growing out of a renewed interest in the influence of neighborhoods on health conditions, researchers have investigated how shared norms, mutual trust, and reciprocal obligations (social capital) influence diverse health outcomes, including crime and mortality rates (Kawachi & Berkman, 2003). Whereas individuals may not be conscious of the beneficial effects of social capital, collective efficacy refers to a group’s perceived ability to successfully take action for the benefit of the common good (e.g., crime prevention). Studies have associated collective efficacy with lower rates of violence, for example (Sampson, 2003). However, the ability to achieve common goals

also depends on the wider political environment or institutional capacity through linkages among organizations within and outside the focal community.

## A TYPOLOGY OF THEORIES AND MODELS

At the beginning of this chapter, some distinctions were presented between theories and models. However, to simplify the following review, both theories and models are discussed under the rubric of “models.” In the following sections, different conceptual frameworks are grouped according to the level of the social ecology of health model in which it fits most closely. A number of the models reviewed might be grouped under more than one level; the decision to place them in a particular level was based on the dominant emphasis of the approach and how they have been used in practice. The first category describes Level I models, or *intrapersonal models* that emphasize mental constructs about how people think about a health-related domain. The second category describes aspects of an individual’s social environment within Level II models, or *interpersonal models* of health-related behavior. The third category includes Level III models, or *organizational models* for research and interventions to improve the health status of groups. The fourth category addresses Level IV models, or *community models* for health intervention. The fifth category, *societal-level models*, includes approaches that stress the social structural and national policy influences on health problems. Finally, the sixth category encompasses *multilevel models*, or frameworks that transcend any single level of influence within the social ecology of health model and, therefore, are treated separately. It brings together multilevel models of health behavior change, which address all levels of the social ecology of health model, including societal and global-level influences. Although many of the models to be reviewed within the categories of intrapersonal, organizational, and community, in fact, include components that overlap more than one level, multilevel models encompass the full model or several levels and place explanatory emphasis on more than two levels.

### Intrapersonal-Level Models

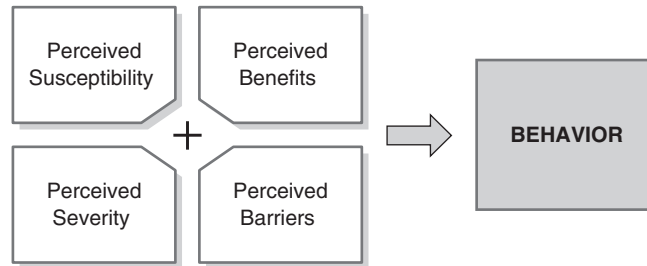
A large number of health behavior models fall within the intrapersonal level of influence because they emphasize cognitive and behavioral factors and are often referred to as cognitive models. The term *cognitive models* comes from the root word *cognition*, which denotes the process of knowing or perceiving. Thus, cognitive models focus on people’s knowledge, attitudes, and perceptions about a topic. As noted previously, much of the early work on health behavior emphasized individuals’ understanding of the factors involved in producing a healthy or unhealthy outcome. Over the years, more specific constructs have been identified to denote more narrowly defined cognitions, such as expectancies and intentions.

#### *The Health Belief Model*

The earliest framework in this tradition is the health belief model (Janz, Champion, & Stretcher, 2002), depicted in Figure 4.1. The model posits that the decision to take action to



**FIGURE 4.1** Health Belief Model



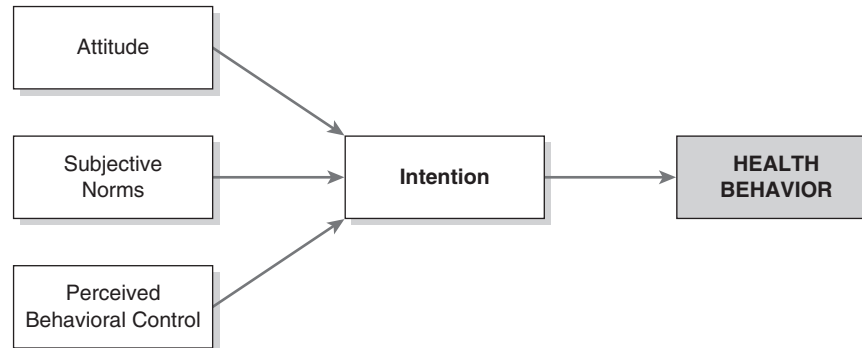
protect one's health is determined by four factors: (1) whether people consider themselves susceptible to the condition (perceived susceptibility), (2) whether the condition is perceived as having serious personal consequences (perceived severity), (3) whether a specific action is expected to reduce the risk of getting the condition or the consequences of it (perceived benefits), and (4) whether the perceived benefits of the action outweigh the subjective costs or barriers to taking action (perceived barriers).

For example, a middle-aged woman in good health may think that she has a very low chance of getting the flu because she hasn't had a bout in many years (susceptibility), and her recollection of the last episode is that it was not that debilitating (severity). She has doubts that the generic flu shot actually protects someone from acquiring the infection (benefit), and she would have to take time off work and drive across town to get one (barrier). In this scenario, the woman's "decisional balance" would probably lead her to decide not to get the immunization. In contrast, another middle-aged woman with a family history of breast cancer might consider herself at risk for the disease (susceptibility), which she fears as a "death sentence" because several of her relatives have died from it (severity). She has faith that a mammography exam can detect cancerous growths at an early stage (benefit), her health care plan provides full coverage of the costs, and the mammography service is located in the same building as her primary provider (no barriers). In addition, her doctor provides what the health belief model calls a "cue to action"; that is, he reminds her to get a mammogram when she goes in for an annual checkup. Not surprisingly, this woman receives mammography screening on a regular basis.

### ***Theory of Planned Behavior***

The theory of planned behavior, which grew out of the theory of reasoned action, gives primary attention to cognitive factors that influence an individual's "intention" to perform a behavior (Ajzen, 1991). Intention is singled out as the most proximate determinant of behavior because health-related actions are usually adopted in a conscious or "planned" manner. This model posits that intentional behavior is determined by three factors: (1) attitude toward the behavior, (2) subjective social norms, and (3) perceived behavioral control. The relationship among the model's components is depicted in Figure 4.2.

**FIGURE 4.2** Theory of Planned Behavior



An attitude differs from a belief in that it reflects some form of disposition toward the object of attention. Thus, an individual's attitude toward making a dietary change may range from negative to positive on a continuum. Subjective norms refer to people's perceptions of how their reference groups (people they think about when assessing what is normal or socially approved) feel about the behavior. Someone living in a community where others rarely get an annual checkup but instead go to the doctor only when they are obviously sick might feel that getting a specific screening test is unnecessary, too much trouble, and a luxury he or she cannot afford. Perceived behavioral control refers to individuals' assessment of how easy or difficult it will be for them to successfully perform a behavior, a construct that is similar to what other models call "self-efficacy." Early trials at using a condom, for example, may have been problematic for an adolescent, leading to low perceived behavioral control when contemplating future use of condoms. Putting the parts together, the model predicts that people will plan and carry out a health behavior when their attitude toward the behavior is positive, the people important to them endorse the behavior, and they expect to be able to perform the behavior successfully.

### ***Transtheoretical Model***

The transtheoretical model is an example of a "stage model" of behavior change. Stage models of health behavior are built around the principle that people rarely make significant changes in their health-related behavior all at once. Instead, they tend to go through predictable sequences of thinking about, trying out, and then adopting a behavior. For example, smokers rarely abandon cigarettes overnight; most quitters go through periods of thinking about cessation, making plans for how to do it, and multiple attempts to stop before becoming permanent nonsmokers. One of the most important practical applications of stage models is the idea that interventions should be tailored to address the unique constellation of influences on different stages of behavior change. According to this model, people move from no motivation to change through incremental phases of thinking about adopting a behavior, preparing to do it,

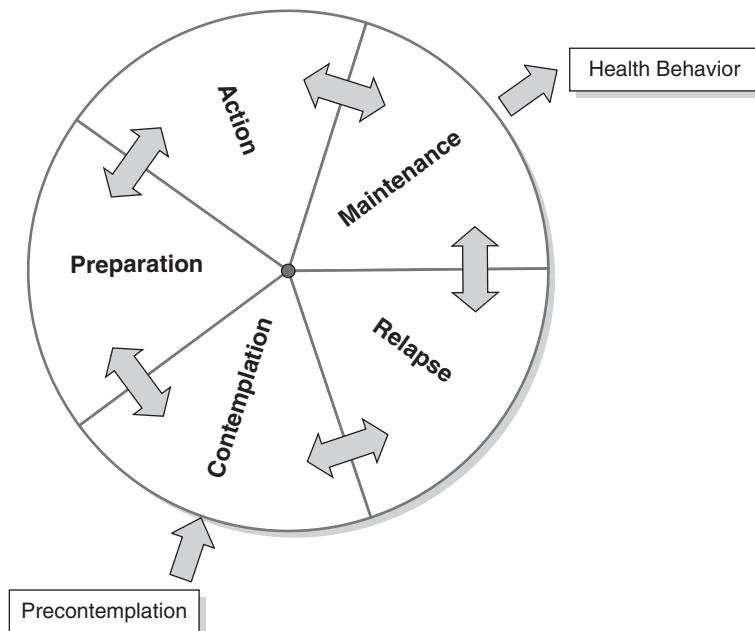
initiating the behavior, and finally reaching a stage of regular performance (Prochaska & DiClemente, 1984). These phases are labeled precontemplation, contemplation, preparation, action, and maintenance (see Figure 4.3).

The process of moving through the stages is not always linear; that is, people may not progress directly from one stage to the next in the sequence. They may remain stationary in one stage or even revert back to a prior phase if their attempts to advance to the next stage are unsuccessful. For example, a substance abuser who has managed to remain drug-free for a long period may still “relapse” and begin using drugs again. Moreover, the factors that propel successful movement through the sequence, called “processes” in the model, vary across the different stages of change. For example, perceived risk is an important determinant of movement from precontemplation to contemplation, perceived self-efficacy is important in movement to action, and social support is important to reaching maintenance. This model has proved very useful in explaining cessation of addictive behaviors and has been applied successfully to other health-promoting behaviors as well.

### ***Self-Regulatory Models***

The term *self-regulation* comes from the field of psychology and is concerned with the ways in which individuals monitor their behavior and its consequences and continually make adjustments to “regulate” their actions to achieve life goals (Cameron & Levanthal, 2003). If

**FIGURE 4.3** Transtheoretical Model



someone's goal is to maintain a certain weight range, for example, he or she may engage in a variety of behaviors and pay attention to certain things in day-to-day living, such as getting on the scale the first thing in the morning, observing how his or her clothes fit, and watching what he or she eats. If one notices that his or her clothes seem tighter than usual, this may trigger more heightened self-monitoring about food consumption. Self-regulatory models attempt to explain the factors that come into play during this regulation process. One approach is to focus on the specific "scripts" people follow to accomplish goals (Schank & Abelson, 1977). Take the general goal of "staying healthy," for example; most people have in their heads a certain script for maintaining overall health that might include eating a balanced diet, exercising regularly, consuming alcohol in moderation, managing stress levels, getting regular checkups, and following physicians' recommendations when they get sick. More specific scripts might be identified for maintaining sexual health, coping with a serious illness, or learning to perform a specific behavior, such as strength training.

One particular self-regulatory model that has been used in health behavior research is the common sense model developed by Leventhal and colleagues (2003). The model is based on two general propositions. First, people react to health threats in commonsense ways, by constructing representations about the threat that include, for example, ideas about its causes, consequences, and control. Second, these representations generate goals for managing the problem and suggest actions for achieving the goals as well as criteria for assessing the effectiveness of one's response to the threat. Over time, representations are shaped and modified by the outcomes of specific procedures for preventing or treating illness, as in a feedback loop.

## Interpersonal-Level Models

Interpersonal theories of health encompass a wide range of models and frameworks for understanding how the social context of people's lives influences their health. Individuals have important relationships with others through their family connections, work settings, friendships, organizations, as well as the wider community and society in which they live. Many interpersonal theories and concepts are reviewed in Chapter 6 of this book, which addresses the social environment of health. For example, social roles, social support, and family systems all play an important part in shaping health-related behavior and influencing health outcomes.

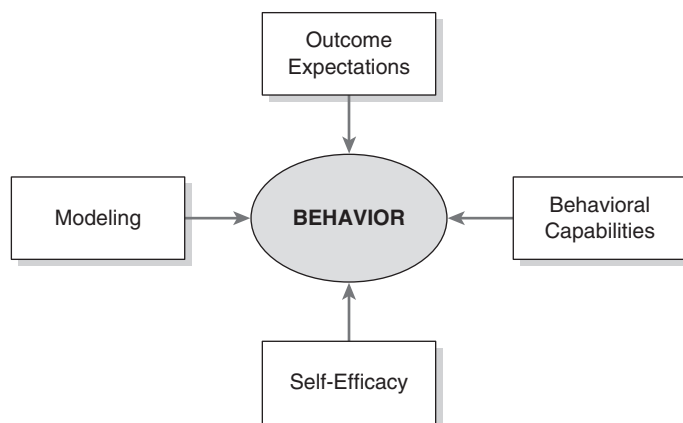
Social support theory is a general theory that seeks to explain the process of assistance provided through human relationships. It is not associated with a particular individual but has evolved over time through the work of many scholars. The concept of social support has figured importantly in research on health, particularly in terms of its protective effects against stress and adverse life events (Berkman et al., 2000; Cassel, 1976; Heaney & Israel, 2002). Supportive interpersonal transactions take place through social networks, or the web of interpersonal relationships surrounding an individual, and may include different kinds of assistance, such as emotional or instrumental (practical) support. A great deal of research has documented the positive effects of social support on a broad range of health outcomes and, conversely, the deleterious impact of low social support on health (Berkman & Glass, 2000).

One widely used theory of social influence is social cognitive theory (Bandura, 2001). As suggested by its name, social cognitive theory describes how social relationships influence cognitions and behavior in a reciprocal process of dynamic interaction. The theory includes quite a few constructs and processes and has grown more complex over the years. Although we have chosen to present the model within the category of interpersonal models, because of its emphasis on social influence, it could also be considered a multilevel model because it addresses dynamic interactions with higher ecological levels. A simplified version is presented here that highlights the components that have received more attention in public health applications. Key constructs within the theory include modeling, outcome expectations, self-efficacy, and behavioral capability (see Figure 4.4). Modeling refers to the process of vicarious learning from observing significant others in our social environment. For example, a teenage boy may have observed his elder brother carrying condoms in his wallet and heard his brother's stories about using a condom. This modeling may lead him to carry condoms when he begins to think about initiating sex. Outcome expectations refer to beliefs about the consequences of taking a certain action. For example, the adolescent may believe that using a condom will protect him from a sexually transmitted disease. Self-efficacy refers to one's perceived ability to carry out a behavior. The adolescent in this example may believe that he can use a condom because it was demonstrated for him on a banana at school. Behavioral capability, on the other hand, refers to someone's actual ability to perform the behavior in real-life situations. For example, a teenager may believe that he can use a condom properly when the situation requires it (self-efficacy), but when the time comes to act, he lacks the knowledge and skills (behavioral capability) to use the condom effectively.

## Organizational-Level Models

Much of the work of public health takes place through organizations, whether these are local or state health departments, community coalitions, civic associations, schools, health care

**FIGURE 4.4** Social Cognitive Theory



organizations, nonprofit corporations, professional associations, government agencies, or international organizations. Thus, organizational theory can be useful in understanding the workings of these complex entities, and it can help plan programs that involve the collaboration of different organizations and sectors of society. For example, in Chapter 8, organizational culture theory is applied to the professions of medicine and public health, showing how basic values and principles differ in the practices of these institutions. In this section, we describe the diffusion of innovation theory, which can be applied to both organizations and individual behavior change.

### ***Diffusion of Innovation Theory***

When introducing a new behavior into a population or a new program into an organization, it is helpful to understand how the adoption of the innovation will proceed over time. Like individual behavior change, new health practices and programs are not adopted overnight by the target group. They tend to be adopted in predictable stages, and the determinants of adoption at different stages also tend to be patterned. One theory that attempts to model the change process within populations and organizations is the diffusion of innovation theory (Rogers, 1995). The theory was originally developed to explain individual adoption of technological innovations, such as the use of contraception, but in recent years has shifted to organizational change. Early formulations identified distinct groups of adopters in the innovation process (early adopters, early majority, late majority, and laggards), as well as characteristics of the innovation itself that affected patterns of acceptance. For example, early adopters tend to be open to risk taking, and innovations that are highly compatible with existing practices are more readily adopted. When applied to organizations, the change process tends to be more complex because of embedded bureaucratic and decision-making structures; however, stages of change analogous to individual innovation have been identified. One formulation defines the stages as following a pattern of dissemination, adoption, implementation, maintenance, and institutionalization (Oldenberg & Parcel, 2002). For example, a school district may consider adopting a coordinated program for improving healthy food choices in its schools. It may disseminate information about the program to its member schools and invite interested schools to participate in a pilot project. Evaluation of the first year of implementation in the demonstration schools may show impressive results, which leads more schools to adopt the program in succeeding years. Sustained success with the program and support from parent and teacher groups eventually may lead to districtwide institutionalization of the program.

### **Community-Level Models**

Because so much of public health work is community based and conducted within defined local populations, community-level models offer useful approaches to research and program design. In Chapter 14, Bryant discusses the application of community organization theory to planning community-based health interventions, which emphasize the

principle of local participation in the planning and implementation of programs. In recent years, increasing attention has been accorded to cultural diversity within target communities and the importance of incorporating cultural competence in program design through an in-depth understanding of the cultural factors that influence responses to planned interventions (see Chapter 9). The study of cultural models of illness, and how these shape behavior, offers one approach to gaining a deeper understanding of the cultural context of behavior.

### ***Cultural Models***

*Cultural models* of health and illness focus on identifying the components of health-related beliefs and behavior that are shared by members of a social group. The group may be very small, such as when we look at family culture; medium sized, such as when we look at organizational culture; or large scale, such as when we refer to “American” culture. Cultural models outline common ways of thinking about and acting on a defined area of concern. Like other aspects of culture, they are learned through processes of socialization within the group, and they guide human action in responding to life events. For example, most Americans subscribe to a common model of what is involved in “going to the doctor” when sick. One makes an appointment in advance, signs in on arrival, sits in the “waiting room” until called, gets weighed and has one’s blood pressure taken, and is then taken to an exam room to wait for the doctor. The doctor comes in to take a history of the problem, a medical assistant takes samples for diagnostic tests, and then the doctor returns to give a diagnosis and prescribe treatment. Cultural models are similar to the notion of action scripts discussed in the previous section, but while scripts may be idiosyncratic to particular individuals, cultural models are shared across members of a group. However, similar to the way psychologists apply the idea of scripts, anthropologists use the concept of “explanatory models” of illness to describe an individual’s understanding of a particular illness episode in terms of its etiology, symptoms, and treatment.

### **Societal-Level Models**

Approaches to understanding health that emphasize societal-level influences include those that encompass social structural, political, and economic influences on health. Research and practice of this type focus on distal determinants of health, such as social class, economic inequality, and national health policy. The approach taken may be descriptive, such as the perspectives on social epidemiology presented in Chapter 3, or it may take a more critical stance on health policy and the organization of services. For example, in discussing different approaches to policy and advocacy in Chapter 16, Whiteford applies political-economic perspectives in analyzing the Cuban health care system.

Societal-level models draw on various sociopolitical theories, such as world systems theory and political economy of health theory, to help explain variation in health conditions and risk behavior through analysis of upstream, macrolevel forces. All these theories have

roots in the work of Karl Marx and his critique of capitalism as an economic system. World systems theory (Wallerstein, 1974) expands the critique of capitalism to a global scale, arguing that relations of production create economic inequalities not only within countries but also among nations, through expropriation of resources away from “peripheral” economies and toward the dominant “core” economies of capitalism. Applied to health, the theory posits that the unequal flow of resources to the global North explains a great deal about worldwide health disparities. This theory and other similar formulations grew out of attempts to describe the nature of social change in postindustrial society, including processes of modernization and globalization. In recent years, a body of ideas has developed around the study of globalization, the process of movement toward worldwide integration of not only economic systems but also sociocultural systems, communications media, sports, education, entertainment, and many other social institutions. Within such a broad context, public health problems can be analyzed in terms of the forces of globalization, such as understanding drug use in one part of the world as intricately connected to world economic systems and global politics as well as youth and celebrity culture communicated through television and the Internet.

Political-economic theory can also be applied to health within single societies to understand how the relations of economic production shape public health problems. For example, some argue that the medical-industrial complex in the United States fuels ever higher production and spending on health care, leading to an out of control situation in which many citizens fall through the cracks (Waitzman, 1983). A related perspective is sometimes referred to as the social production of health (Turshen, 1989), a model of disease causation that views health outcomes as socially generated and nonspecific. In other words, the same set of disadvantageous social conditions (poverty, homelessness, incarceration, and discrimination) can be linked to a variety of health outcomes, including malnutrition, infectious diseases, drug use, violence, infant mortality—the list is quite long. The social production of health model further posits that intervening on a single health outcome without addressing deeper fundamental causes will invariably lead to failure in the long term.

More recently, critical medical anthropologists have proposed a “syndemic model” of disease causation that stresses both the co-occurring nature of multiple health problems in disadvantaged populations and the co-occurrence of predictable social conditions associated with these problems (Singer & Clair, 2003). The traditional biomedical view of disease, and to some extent the view of public health as well, is to study and intervene with individual diseases as if they were distinct entities that exist separately from other diseases and independent of the social contexts in which they occur. The syndemic model emphasizes the biosocial interconnections between multiple health problems and their antecedent social conditions. For example, it is no surprise that in Haiti, which is the poorest and least developed country in the western hemisphere, one finds very high rates of malnutrition and infectious diseases and that the HIV/AIDS epidemic hit very hard there (Baer & Singer, 2006). In general, the poor and disenfranchised bear a disproportionate share of disease burden throughout the world.

Societal-level influences are also emphasized in multilevel models of health problems, to which we now turn.



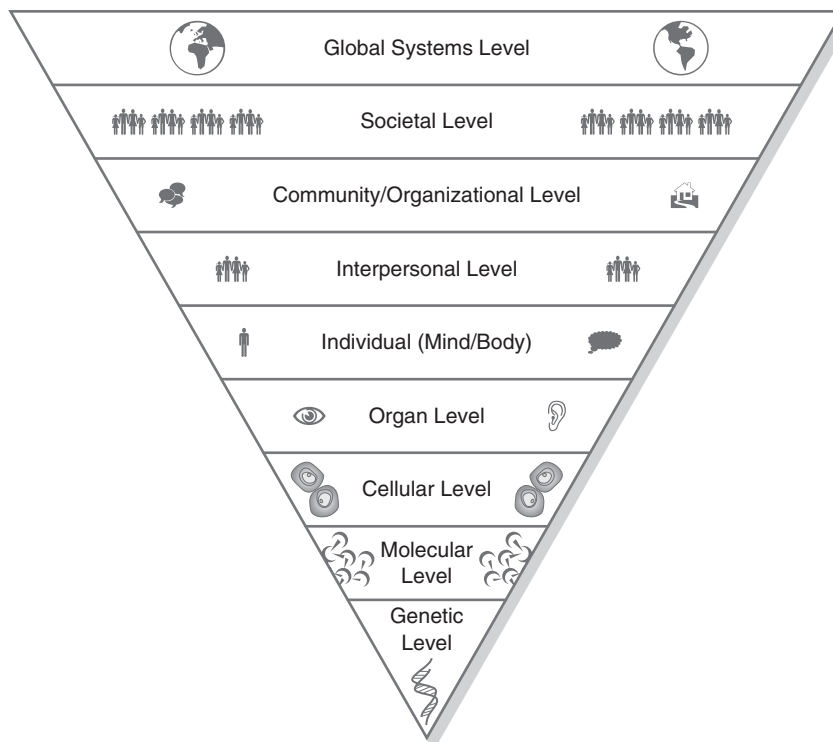
## Multilevel Models

Multilevel frameworks that address distal, intermediate, and proximate factors have become increasingly important for understanding all kinds of health conditions, and they are essential for analyzing public health problems. As noted in the Preface to this volume, one of the core competencies for training public health students is the ability to analyze determinants of health and disease using an ecological, or multilevel, framework. One of the earliest multilevel models developed in the health field was the biopsychosocial model (Suls & Rothman, 2004). Developed primarily to explain the complex interplay of biological and social factors in disease etiology, the model depicts multiple levels above and below the individual, arranged hierarchically from the most macrolevel at the top (global systems) down to the most microlevel at the bottom (genetic systems). Figure 4.5 shows the different levels in this model.

There are obvious similarities between the biopsychosocial model and the social ecology of health model presented in Chapter 1. However, the biopsychosocial model gives greater attention to different levels of biological systems within the human body, while the social ecology of health model elaborates macrolevel differentiation within higher-order social systems.

Another multilevel model based on systems theory is Bronfenbrenner's (1979) ecological model of child development. In this formulation, child development is viewed within the

**FIGURE 4.5** Biopsychosocial Model



context of relationships that form the child’s environment. These relationships are organized into three-tiered systems: the microsystem, mesosystem, and exosystem. Similar to other ecological models, the microsystem encompasses individual biology and behavior as well as cognitive and emotional dimensions; the mesosystem encompasses child-relevant institutions such as family, school, and religion; and the exosystem incorporates broader community, societal, and cultural systems affecting the child’s development. These complex layers of the child’s environment interact with the child’s biological endowment to shape development in predictable ways.

## MAPPING THEORIES TO THE SOCIAL ECOLOGY OF HEALTH MODEL

In this final section, the theories reviewed in this chapter and elsewhere in the book are matched with the ecological level to which they correspond most closely<sup>1</sup> (see Figure 4.6). Some theories might be placed at more than one level. For example, diffusion of innovation theory can be applied to individual behavior as well as to organizational change. Likewise, multilevel models, such as the biopsychosocial model, cut across multiple levels of the ecosystem. While an ecological framework is useful as an analytic tool for understanding complex influences on a problem, it is rather unwieldy to apply in a comprehensive fashion within a single research study or intervention. The complexity and costliness of a project that might address all levels of the model within the scope of a single program or study would be unmanageable. In practice, research

**FIGURE 4.6**

Theories and Levels in the Social Ecology Framework

Level	Theories and Models
INDIVIDUAL	Health Belief Model Theory of Planned Behavior Transtheoretical Model Self-Regulatory Models
INTERPERSONAL	Social Support Theory Social Cognitive Theory
ORGANIZATIONAL	Organizational Culture Theory Diffusion of Innovation Theory
COMMUNITY	Community Organization Cultural Models
SOCIETY	Social Determinants of Health Political Economy of Health

and interventions typically address a single level or at best a partial subset of the entire framework, although the importance of other levels may be taken into consideration in the design of the project. In addition, most studies and programs focus on a narrowly defined problem and seek to understand or affect a circumscribed set of influences. Therefore, to analyze public health problems in their complexity, it is necessary to review a range of different kinds of research and programs conducted at different levels and think through how the different results might fit together. Likewise, knowledge generated through different theories can provide a multifaceted understanding of problems and their solutions.

The choice of theories to use in designing a study, planning a program, or formulating a policy will be informed by the aims of the study, the resources available to achieve one's goals, and the preferences and background of the researcher/planner. Although many professionals develop allegiances to a particular theory because the kind of explanation it offers makes the most sense to them, it is the target problem itself that counts the most in determining which theory or model fits best. For example, if the aim of the study is to better understand why some community coalitions are more successful than others, the health belief model is not likely to offer much useful theoretical guidance. On the other hand, if the goal is to understand the process that persons with diabetes go through to learn how to regulate their blood sugar levels, a behavior change or self-regulation model might prove highly useful in planning the study. In the same way that research methods should fit the problem under study, theories, models, and frameworks must "fit" the problem.

In recent years, refinements of behavior change models have taken two directions, one focused on developing problem-specific conceptual models and the other in the direction of synthesizing multiple models to produce more generic frameworks applicable across a wide range of problems. For example, the information-motivation-behavioral skills (IMB) model was developed to study HIV-/AIDS-related behavior and to design preventive interventions related to sexually transmitted diseases (Fisher, Fisher, Bryan, & Misovich, 2002). It posits that for health protective action to take place, relevant information and motivation must first be present. Under these conditions, five types of skills necessary for reduction of sexual risk behavior can be identified. This model has been applied to a range of sexual health issues and has applicability to an even broader range of health behaviors. An example of the synthetic approach is the development of the integrated model of health behavior (Fishbein et al., 2001). This model grew out of a workshop sponsored by the National Institute of Mental Health, which brought together leading theorists in the field of health behavior to review the state of knowledge and try to reach consensus on what were the most important factors to consider in understanding and predicting health-related behavior. The outcome of the workshop was a formulation given the name of the integrated model, which incorporates external variables, beliefs, norms, efficacy expectations, motivation, skills, and intentions.

Development of new conceptual models and refinement of existing frameworks for understanding health behavior will continue undoubtedly in the coming years. The professional reward system fosters the production of conceptual reformulations that can be published as "new" models claiming to offer advantages over existing ones, and there is a tendency for researchers to assume that what is new is better than the old. However, investigators rarely

compare the utility of more than one model in a single study, so there is limited evidence to support the relative advantages that one model has over another. This issue is discussed further in the Afterword, which looks to future directions of scholarly work in the social and behavioral sciences applied to public health.

## NOTE

1. A similar mapping of theories to ecological levels can be found in Bartholomew, Parcel, Kok, and Gottlieb (2001, p. 80).

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