CHAPTER 2: THEORY, RESEARCH, AND PRACTICE IN HEALTH BEHAVIOR AND HEALTH EDUCATION

THE EDITORS

Key Points

This chapter will

- Discuss the interrelationships between theory, research, and practice.
- Define *theory* and the key characteristics and features of theories.
- Describe and provide examples of the building blocks of theory (concepts, constructs, variables) and related terms (models and principles).
- Provide a historical review of key paradigms for theory and research in health promotion and education.
- Summarize trends in the use of health behavior theories and models.
- Explain the selection of theories for inclusion in this book, as well as the related limitations.
- Introduce key considerations in fitting a theory or theories to research and practice.

Theory, Research, and Practice: Interrelationships

Aristotle distinguished between *theoria* and *praxis*. *Theoria* signifies those sciences and activities concerned with knowing for its own sake, whereas *praxis* corresponds to action or doing. This contrast between theory and practice (Bernstein, 1971) permeates Western philosophical and scientific thought from Aristotle to Marx and on to Dewey and other contemporary twentieth-century philosophers. Theory and practice long have been regarded as opposites with irreconcilable differences. Dewey attempted to resolve the dichotomy by focusing on similarities and continuities between theoretical and practical judgments and inquiries. He described "experimental knowing" essentially as an art that involves a conscious, directed manipulation of objects and situations. "The craftsman perfects his art, not by comparing his product to some 'ideal' model, but by the cumulative results of experience—experience which benefits from tried and tested procedures but always involves risk and novelty" (Bernstein, 1971). Dewey thus described empirical investigation—research—as the ground between theory and practice and the testing of theory in action.

Theory, Research, and Practice: Interrelationships

Although the perception of theory and practice as a dichotomy has a long tradition in intellectual thought, we follow in Dewey's tradition and focus on the similarities and continuities rather than on the differences. Theory, research, and practice are a continuum along which the skilled professional should move with ease. Not only are they related, but they are each essential to health education and health behavior. Theory and research should not be solely the province of academics, just as practice is not solely the concern of practitioners. The best theory is informed by practice; the best practice should be grounded in theory. There is a tension between them that one must navigate continually, but they are not in opposition. Theory and practice

enrich one another by their dynamic interaction. Researchers and practitioners may differ in their priorities, but the relationship between research and its application can and should move in both directions (D'Onofrio, 1992; Freudenberg and others, 1995). Professional fields like health education are ideal for "reflective practitioners," who can ensure that theories and practice build on each other (Schön, 1983).

The recognition that science and humanistic endeavors like public health are convergent is increasing. This view was articulated by the Dalai Lama (2005), who wrote, "Perhaps the most important point is to ensure that science never becomes divorced from the basic human feeling of empathy with our fellow beings."

The task of health behavior and health education is both to understand health behavior and to transform knowledge about behavior into effective strategies for health enhancement. Research in health education and health behavior ultimately will be judged by its contributions to improving the health of populations. Although basic behavioral research is important in developing theories, we must ultimately test our theories iteratively in real-world contexts (Rosenstock, 1990). When we do so, theory, research, and practice begin to converge. The authors of this book examine theories in light of their applicability. By including an explanation of theories and their application in each chapter, we are trying to break down the dichotomy between theory and practice.

Relationships among theory, research, and practice are not simple or linear. The larger picture of health improvement and disease reduction is better described as a cycle of interacting types of endeavors, including fundamental research (research into determinants, as well as development of methodologies), intervention research (research aimed toward change), surveillance research (tracking populationwide trends, including maintenance of change), and application and program delivery (Hiatt and Rimer, 1999; Sallis, Owen, and Fotheringham, 2000). At the heart of this cycle is knowledge synthesis. Continually updated critical appraisals of the available literature are central to identifying interventions that should be disseminated in order to reduce the burden of disease (Rimer, Glanz, and Rasband, 2001). There is increasing recognition that, as Larry Green has stated, "if we want more evidence-based practice, we need more practice-based evidence" (Green and Glasgow, 2006).

Health Behavior and Health Education aims to help educators—*writ large*—whatever their backgrounds or disciplines, understand some of the most important theoretical underpinnings of health education and health behavior and use theory to inform research and practice. The authors of *Health Behavior and Health Education* believe that "there is nothing so useful as a good theory" (Lewin, 1935). Each chapter demonstrates the practical value of theory; each summarizes what was learned through conceptually sound research and practice, and each draws the linkages among theory, research, and practice.

Professionals charged with responsibility for health education and health behavior are, by and large, interventionists. They are action-oriented. They use their knowledge to design and implement programs to improve health. This is true, whether they are working to encourage health-enhancing changes in individual or community behavior or conditions. It is equally true of most health education and health behavior research. Often, in the process of attempting to change behavior, environments, or policies, researchers must do precisely what practitioners do—develop and deliver interventions. At some level, both practitioners and researchers are accountable for results, whether these are measured in terms of participants' satisfaction with programs, or changes in their awareness, knowledge, attitudes, beliefs, or health behaviors, or in their improved decision making; institutional norms; community integration; or more distal

results, including morbidity, mortality, and quality of life. Health educators may assess these results anecdotally, complete in-depth qualitative assessments, or conduct rigorous empirical evaluations.

The design of interventions that yield desirable changes can best be done with an understanding of theories of behavior change and an ability to use them skillfully in research and practice (Grol and others, 2007). Most health educators work in situations in which resources are limited. This makes it essential that they reach evidence-informed judgments about the choice of interventions, both in the interest of efficiency and to improve the odds of success. There may be no second chance to reach a critical target audience.

A synthesis of theory, research, and practice will advance what is known about health behavior. A health educator without a theory is like a mechanic or a technician, whereas the professional who understands theory and research comprehends the "why" and can design and craft well-tailored interventions. He or she does not blindly follow a cookbook recipe but constantly creates the recipe anew, depending on the circumstances, based, preferably, on evidence about the intended audience and previous interventions. In health education, the circumstances include the nature of the target audience, the setting, resources, goals, and constraints (Bartholomew, Parcel, Kok, and Gottlieb, 2006). Many good planning models are available to help professionals and communities decide which problems and variables to focus on and to help them understand key elements of the background situation (see Chapter Eighteen for examples).

An understanding of theory may guide users to measure more carefully and astutely in order to assess the impact of interventions (Grol and others, 2007). Learning from successive interventions and from published evidence strengthens the knowledge base of individual health professionals. Over time, such cumulative learning also contributes to the knowledge base of all.

The health professional in a health maintenance organization who understands the relevance of The Transtheoretical Model (TTM) or Social Cognitive Theory (SCT) may be able to design better interventions to help patients lose weight or stop smoking. The community health educator who understands principles of social marketing and media communication can make far better use of the mass media than one who does not. The nurse who recognizes that observational learning is important to how people learn, as postulated in SCT, may do a better job of teaching diabetics how to administer their injections. A working knowledge of community organization can help the educator identify and mobilize key individuals and groups to develop or maintain a health promotion program. The physician who understands interpersonal influence can communicate more effectively with patients. The health psychologist who understands TTM will know how to design better smoking cessation and exercise interventions and how to tailor them to the needs of his or her patients.

What is Theory?

A theory is a set of interrelated concepts, definitions, and propositions that present a *systematic* view of events or situations by specifying relations among variables, in order to *explain* and *predict* the events or situations. The notion of *`testability* (van Ryn and Heaney, 1992). Theories are by their nature *abstract*, that is, they do not have a specified content or topic area. Like an empty coffee cup, they have a shape and boundaries but nothing concrete inside.

They only come alive in public health and health behavior when they are filled with practical topics, goals, and problems.

A formal theory—more an ideal than a reality—is a completely closed, deductive system of propositions that identifies the interrelationships among the concepts and is a systematic view of the phenomena (Kerlinger, 1986; Blalock, 1969). In reality, there is no such system in the social sciences or health promotion and education; it can only be approximated (Blalock, 1969). Theory has been defined in a variety of ways, each consistent with Kerlinger's definition. Table 2.1 summarizes several definitions of theory. These definitions, put forth in the 1970s and 1980s, have stood the test of time. They have been articulated in more recent works without substantive changes (Isaac and Michael, 1995; Sussman, 2001).

Table 2.1. Definitions of Theory.

DEFINITION	SOURCE
A set of interrelated constructs (concepts), definitions, and propositions that present a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting phenomena	Kerlinger, 1986, p. 9
A systematic explanation for the observed facts and laws that relate to a particular aspect of life	Babbie, 1989, p. 46
Knowledge writ large in the form of generalized abstractions applicable to a wide range of experiences	McGuire, 1983, p. 2
A set of relatively abstract and general statements which collectively purport to explain some aspect of the empirical world	Chafetz, 1978, p. 2
An abstract, symbolic representation of what is conceived to be reality—a set of abstract statements designed to "fit" some portion of the real world	Zimbardo, Ebbesen, and Maslach, 1977, p. 53

Theories are useful during the various stages of planning, implementing, and evaluating interventions. Program planners can use theories to shape the pursuit of answers to *Why? What? How?* In other words, theories can be used to guide the search for *why* people are not following public health and medical advice or not caring for themselves in healthy ways. They can help pinpoint *what* one needs to know before developing and organizing an intervention program. They can provide insight into *how* to shape program strategies to reach people and organizations and make an impact on them. They also help to identify *what* should be monitored, measured, and compared in a program evaluation (Glanz, Lewis, and Rimer, 1996; Glanz, Rimer, and Lewis, 2002).

Thus, theories and models *explain* behavior and suggest ways to achieve behavior *change.* An explanatory theory (often called a *theory of the problem*) helps describe and identify why a problem exists. Such theories also predict behaviors under defined conditions and guide the search for modifiable factors like knowledge, attitudes, self-efficacy, social support, and lack of resources. Change theories, or *theories of action,* guide the development of interventions. They also form the basis for evaluation, pushing the evaluator to make explicit her or his assumptions about how a program should work. Implementation theories are change theories that link theory specifically to a given problem, audience, and context (Institute of Medicine, 2002). These two types of theories often have different foci but are complementary.

Even though various theoretical models of health behavior may reflect the same general ideas, each theory employs a unique vocabulary to articulate the specific factors considered important. The *why* tells us about the processes by which changes occur in target variables. Theories vary in the extent to which they have been conceptually developed and empirically tested. Bandura (1986) stressed that "theories are interpreted in different ways depending on the stage of development of the field of study. In advanced disciplines, theories integrate laws; in less advanced fields, theories specify the determinants governing the phenomena of interest." The term *theory* is used in the latter sense in *Health Behavior and Health Education,* because the field is still relatively young.

As we discuss later in this chapter, many new “theories” or models have been and continue to be proposed in health behavior. The proliferation of theories in health behavior poses a challenge: When do we accept a theory as truly advancing our understanding of a phenomenon? Lakatos and Musgrave (1970), though referring to theories in physics, offer some rules of thumb. A new theory can be considered acceptable if it explains everything that the prior theories explain, provides explanation for phenomena that could *not* be explained by prior theories, and identifies conditions under which the theory could be falsified. Although this is a high standard for theories in social sciences, it provides a rough guidance on heuristic evaluation of theories in health behavior. Another expectation of an established theory is that there should be a body of research testing and supporting it—research that has been conducted by multiple scientists beyond the original developer or developers.

Concepts, Constructs, and Variables

Concepts are the major components of a theory; they are its building blocks or primary elements. Concepts can vary in the extent to which they have meaning or can be understood outside the context of a specific theory. When concepts are developed or adopted for use in a particular theory, they are called *constructs* (Kerlinger, 1986). The term *subjective normative belief* is an example of a construct within Ajzen and Fishbein's (1980) Theory of Reasoned

Action (TRA; see Chapter Four); the specific construct has a precise definition in the context of that theory. Another example of a construct is *perceived susceptibility* in the Health Belief Model (HBM; see Chapter Three).

Variables are the empirical counterparts or operational forms of constructs. They specify how a construct is to be measured in a specific situation. *Variables* should be matched to *constructs* when identifying what should be assessed in the evaluation of a theory-driven program.

Principles

Theories go beyond principles. Principles are general guidelines for action. They are broad and nonspecific and may actually distort realities or results based on research. Principles may be based on precedent or history *or* on research. At their worst, principles are so broad that they invite multiple interpretations and are therefore unreliable. In their weakest form, principles are like horoscopes: anyone can derive whatever meaning he or she wants from them. At their best, principles are based on accumulated research. In their best form, principles are the basis for hypotheses— "leading ideas," in the words of Dewey—and serve as our most informed hunches about how or what we should do to obtain a desired outcome in a target population.

Models

Health behavior and the guiding concepts for influencing it are far too complex to be explained by a single, unified theory. *Models* draw on a number of theories to help understand a specific problem in a particular setting or context. They are often informed by more than one theory, as well as by empirical findings (Earp and Ennett, 1991). Several models that support program planning processes are widely used in health promotion and education: Green and Kreuter's PRECEDE-PROCEED model (2005; see Chapter Eighteen), social marketing (see Chapter Nineteen), and ecological models (McLeroy, Bibeau, Steckler, and Glanz, 1988; see Chapter Twenty).

Paradigms for Theory and Research in Health Promotion and Education

A paradigm is a basic schema that organizes our broadly based view of something (Babbie, 1989). Paradigms are widely recognized scientific achievements that, for a time, provide model problem-solving approaches to a community of practitioners and scientists. They include theory, application, and instrumentation and comprise models that represent coherent traditions of scientific research (Kuhn, 1962). Paradigms gain status because they are more successful than their competitors at solving pressing problems (Kuhn, 1962), but they also can impede scientific progress by protecting inconsistent findings until a crisis point is reached; these crisis points lead to scientific revolutions.

Paradigms create boundaries within which the search for answers occurs. They do not answer particular questions, but they do direct the search for answers (Babbie, 1989). Paradigms circumscribe or delimit what is important to examine in a given field of inquiry. The collective

judgments of scientists define the dominant paradigm that constitutes the body of science (Wilson, 1952).

In health education and health behavior (and in this text), the dominant paradigm that supports the largest body of theory and research is that of *logical positivism,* or *logical empiricism.* This basic view, developed in the Vienna Circle from 1924 to 1936, has two central features: (1) an emphasis on the use of induction, or sensory experience, feelings, and personal judgments as the source of knowledge, and (2) the view that deduction is the standard for verification or confirmation of theory, so that theory must be tested through empirical methods and systematic observation of phenomena (Runes, 1984). Logical empiricism reconciles the deductive and inductive extremes; it prescribes that the researcher begin with a hypothesis deduced from a theory and then test it, subjecting it to the jeopardy of disconfirmation through empirical test (McGuire, 1983).

An alternative worldview that is also important in health promotion and education relies more heavily on induction and is often identified as a predominantly constructivist paradigm. This perspective argues that the organization and explanation of events must be revealed through a process of discovery rather than organized into prescribed conceptual categories before a study begins (Lewis, 1996). In this paradigm, data collection methods such as standardized questionnaires and predetermined response categories have a limited place. Ethnography, phenomenology, and grounded theory are examples of approaches using a constructivist paradigm (Strauss, 1987; Kendler, 2005). It has become increasingly common in the field for work to originate within a constructivist paradigm and shift toward a focus on answering specific research questions using methodologies from the logical positivist paradigm. This approach has also gained traction in psychological research (Cacciopo, Semin, and Berntson, 2004).

Lewin's meta-theory stipulates the rules to be followed for building good theory; it is consistent with logical positivism but focuses on his view that the function of social psychology is to further the understanding of the interrelationships between the individual and the social environment (Gold, 1992). This meta-theory is an orientation or approach, distinct from Lewin's specific field theory (Gold, 1992), and has been influential in health behavior theory since the earliest attempts to use social science to solve public health problems (Rosenstock, 1990). Key rules of Lewin's meta-theory include (1) analysis that starts with the situation as a whole, (2) contemporaneity, (3) a dynamic approach, (4) constructive method, (5) mathematical representation of constructs and variables, and (6) a psychological approach that explains both inner experiences and overt actions from the actor's perspective (Lewin, [1942] 1951). The last of these rules implies a single level of analysis requiring "closed theory" and poses a serious limitation to solving the problems of contemporary health promotion. It raises the issue—one that those concerned with health behavior often grapple with—that we must often trade off theoretical elegance in favor of relevance (Gold, 1992).

Although the paradigms described here focus on the basic schema for development and application of knowledge, health education and health behavior are also concerned with approaches to solving social problems—in other words, how to bring about change. Considerable scholarly and practitioner effort have been devoted to developing techniques that change behavior. Although these grew out of a desire to produce a better world, techniques that "push" people to change were experienced by many as manipulative, reducing freedom of choice and sustaining a balance of power in favor of the "change agent" (Kipnis, 1994). A paradigm shift occurred, and most behavioral techniques today (for example, social support, empowerment,

and personal growth) are based on *reducing obstacles to change* and promoting informed decision making, rather than on pushing people to change.

New paradigms for understanding, studying, and applying knowledge about human behavior continue to arise and may be influential in the future of applied social sciences in health behavior and education. The Institute of Medicine's Committee on Capitalizing on Social Science and Behavioral Research to Improve the Public's Health recommended strongly that "interventions on social and behavioral factors should link multiple levels of influence" rather than focusing on a single or limited number of health determinants (Smedley and Syme, 2000). Today, this recommendation is echoed as health educators and social scientists struggle with some of the most challenging health behavior issues, such as tobacco control and obesity prevention, at a time when ecological models begin to be more clearly articulated and studied (see Chapter Twenty).

Trends in Use of Health Behavior Theories and Models

Theories that gain recognition in a discipline shape the field, help define the scope of practice, and influence the training and socialization of its professionals. Today, no single theory or conceptual framework dominates research or practice in health promotion and education. Instead, one can choose from a multitude of theories. For each edition of this book, we reviewed a sample of publications to identify the most often used theories (see Table 2.2). In a review of 116 theory-based articles published between 1986 and 1988 in two major health education journals, conducted during planning for the first edition of this book, we found fifty-one distinct theoretical formulations. At that time, the three most frequently mentioned theories were social learning theory, the TRA, and the HBM (Glanz, Lewis, and Rimer, 1990).

To plan for the second edition of this book, we reviewed 526 articles from twenty-four different journals in health education, medicine, and behavioral sciences, published from mid-1992 to mid-1994. Sixty-six different theories and models were identified, and twenty-one of these were mentioned eight times or more. Two-thirds of the total instances of theory use in the 497 articles involving one or more of the twenty-one most common theories and models were accounted for by the first eight: HBM, SCT, self-efficacy (Bandura, 1997), the TRA/TPB, community organization, TTM/Stages of Change, social marketing, and social support/social networks (Glanz, Lewis, and Rimer, 1996)

Table 2.2. Trends in the Most Commonly Used Health Behavior Theories and Models. [A]

THEORY/MODEL (# OF THEORIES IDENTIFIED)	1986-1988 (51)	1992-1994 (66)	1999-2000 (NA)	2000-2005 (55)
Health Belief Model	✓	✓	✓	✓
Social Learning Theory Social Cognitive Theory	✓	✓	✓	✓
Theory of Reasoned Action	✓	✓	✓	✓

Theory of Planned Behavior				
The Transtheoretical Model/ Stages of Change		✓	✓	✓
Social Support and Social Networks		✓	✓	✓
Community Organization		✓	✓	
Social Marketing		✓		✓
Diffusion of Innovations		✓	✓	✓
Stress and Coping		✓	✓	✓
Patient-Provider Interaction		✓	✓	
Ecological Models/Social Ecology			✓	✓

A Based on reviews conducted for, and described in, first through fourth editions of this book (Glanz and others, 1990; Glanz and others, 1996; Glanz and others, 2002; and the current edition). Samples varied, but methods to identify "theory use" were comparable.

[B] Definition as "theory/model" by authors of published articles; some reflect areas of study informed by multiple theories. See chapter for additional information.

In our review of all issues of twelve journals in health education, health behavior, and preventive medicine published in 1999 and 2000, conducted for the third edition of this book (Glanz, Rimer, and Lewis, 2002), ten theories or models clearly emerged as the most often used. The first two, and by far the most dominant, were SCT and TTM/Stages of Change. The remainder of the top ten theories and models were the HBM, social support and social networks, patient-provider communication, the TRA and TPB, stress and coping, community organization, ecological models/social ecology, and diffusion of innovations.

In a recent, updated review of theory use in published research between 2000 and 2005, we found that the most often used theories were TTM, SCT, and the HBM (Painter and others, 2008). Overall, the same theories dominate as did in 1999 and 2000. As in previous reviews, this review revealed dozens of theories and models that were used, though only a few of them were used in multiple publications and by several authors. Several key constructs cut across the most often cited models for understanding behavior and behavior change: the importance of the individual's view of the world; multiple levels of influence; behavior change as a process; motivation versus intention; intention versus action, and changing behavior versus maintaining behavior change (Glanz and Oldenburg, 2001).

Along with the published observations about *which* theories are being used, concerns have been raised about *how* the theories are used (or not used) in research and practice. A common refrain is that researchers may not understand how to measure and analyze constructs of health behavior theories (Rejeski, Brawley, McAuley, and Rapp, 2000; Marsh, Johnson, and Carey, 2001) or that they may pick and choose variables from different theories in a way that makes it difficult to ascertain the role of theory in intervention development and evaluation. Considerable conceptual confusion among both researchers and practitioners about interrelationships between related theories and variables has also been observed (Rosenstock,

Strecher, and Becker, 1988; Weinstein, 1993). Others have cautioned about the limitations of theory testing because of overreliance on correlational designs (Weinstein, 2007) and the paucity of studies that empirically compare more than one theory (Noar and Zimmerman, 2005; Weinstein and Rothman, 2005). The difficulty of reliably translating theory into interventions to improve clinical effectiveness has led to calls for more "pragmatic trials" (Bhattacharyya, Reeves, Garfinkel, and Zwarenstein, 2006), and increasing attention to the generalizability and translation of interventions into real-world clinical practice (Rothwell, 2005) and community settings (Rohrbach, Grana, Sussman, and Valente, 2006). These are reasonable questions that should encourage us to question how we use theory, how we test theory, how we turn theories into interventions, and what conclusions we draw from research.

Building on our distinctions among the type and degree of theory use (Glanz, 2002), our updated review of theory use from 2000 to 2005 classified articles that employed health behavior theory along a continuum:

- *Informed by theory*: in which a theoretical framework was identified, but no or limited application of the theory was used in specific study components and measures
- *Applied theory*: in which a theoretical framework was specified, and several of the constructs were applied in components of the study
- *Tested theory*: in which a theoretical framework was specified, and more than half the theoretical constructs were measured and explicitly tested, or two or more theories were compared to one another in a study
- *Building/creating theory*: in which new or revised/expanded theory was developed using constructs specified, measured, and analyzed in a study

Of all the theories used in the sample of articles (n = 69 articles using 139 theories), 69.1 percent used theory to inform a study; 17.9 percent of theories were "applied;" 3.6 percent were tested, and 9.4 percent involved building/creating theory (Painter and others, 2008). These findings lead us to reaffirm calls by Noar and Zimmerman (2005) and Weinstein and Rothman (2005) for thorough application and testing of health behavior theories to advance science and move the field forward.

Selection of Theories for This Book

Our selection of theories and models for inclusion in the fourth edition of *Health Behavior and Health Education* was based on the published information summarized here, including an updated analysis of a sample of articles in the health behavior literature. An additional source of data regarding frequently used theories of health behavior is an evidence review on dietary behavior change interventions for cancer prevention (Ammerman and others, 2001). In what appears to be an emerging trend, the evidence tables reported on theories and models used in the 104 intervention studies included in the review. Although nearly two dozen theories were listed, only three were used in more than three studies: SCT, TTM/Stages of Change, and the HBM (Ammerman and others, 2001).

Each one of the most often cited theories and models is the focus of a chapter in this fourth edition of *Health Behavior and Health Education*. These have been selected to provide readers with a range of theories representing different units of intervention (for example,

individuals, groups, and communities). They were also chosen because they represent, as with SCT, TTM, and the HBM—dominant theories of health behavior and health education. Others, like social marketing, the PRECEDE/ PROCEED Model, and community organization, were chosen for their practical value in applying theoretical formulations in a way that has demonstrated usefulness to professionals concerned with health behavior change. The perspectives chapters at the end of each section point to new directions in theory and highlight emerging theories, where appropriate.

Our selection of theories resulted from our review and also reflects some difficult editorial decisions. Three criteria, consistent with and confirming our review, also helped to define selection of material. First, we determined that, to be included, a theory must meet basic standards of adequacy for research and practice, thus having the potential for effective use by health education practitioners. Second, there must be evidence that the theory is being used in *current* health behavior and health education research. (That is why, for example, we include the HBM rather than Lewin's field theory.) The third criterion is that, there must be at least promising, if not substantial, empirical evidence supporting the theory's validity in predicting or changing health behaviors. This does not preclude the possibility of mixed findings and critiques of the evidence, which we believe are increasingly important to bring to light.

In some cases, a purpose rather than the theory is the identifying title for a chapter, as in the case of Chapter Eleven on Interpersonal Communication, which describes theories of interpersonal communication and social influence and illustrates their utility for health education. Chapter Thirteen on Community Organization is named for the resultant intervention strategies rather than for the convergent theoretical bases that form the foundation for community organization work. Chapters in Part Five present the PRECEDE-PROCEED Model for program planning, social marketing, and ecological models, each of which draws on multiple theories to understand health behavior and assist in development of effective intervention programs and strategies.

We recognize the lack of consensus regarding the definition and classification of theories, so we have taken a liberal, ecumenical stance toward theory. We concede that the lowest common denominator of the theoretical models herein might be that they are all *conceptual or theoretical frameworks,* or broadly conceived perspectives used to organize ideas. Nevertheless, we have not abandoned the term *theory,* because it accurately describes the spirit of this book and describes the goal to be attained for developing frameworks and tools for refining health education research and practice.

Fitting a Theory or Theories to Research and Practice

Effective health education depends on marshaling the most appropriate theory and practice strategies for a given situation. Different theories are best suited to different units of practice, such as individuals, groups, and organizations. For example, when one is attempting to overcome women's personal barriers to obtaining mammograms, the HBM may be useful. TTM may be especially useful in developing smoking cessation interventions. The PAPM may be appropriate when trying to explain how people respond to risk communications. When trying to change physicians' mammography practices by instituting reminder systems, organizational change theories are more suitable. At the same time, physicians might use TTM to inform their discussions with individual patients about getting a first mammogram or annual screening. The

choice of a suitable theory should begin with identifying the problem, goal, and units of practice (van Ryn and Heaney, 1992; Sussman and Sussman, 2001), *not* with selecting a theoretical framework because it is intriguing, familiar, or in vogue. As Green and Kreuter (2005) have argued, one should start with a logic model of the problem and work backwards to identify potential solutions.

The adequacy of a theory most often is assessed in terms of three criteria: (1) its *logic*, or *internal consistency* in not yielding mutually contradictory derivations, (2) the extent to which it is *parsimonious*, or broadly relevant while using a manageable number of concepts, and (3) its *plausibility* in fitting with prevailing theories in the field (McGuire, 1983).

Theories also are judged in the context of activities of practitioners and researchers. Practitioners may apply the pragmatic criterion of *usefulness* to a theory and thus would be concerned with its consistency with everyday observations (Burdine and McLeroy, 1992). Researchers make scientific judgments of a theory's *ecological validity*, or the extent to which it conforms to observable reality when empirically tested (McGuire, 1983). We should test our theories iteratively in the field (Rosenstock, 1990), as well as in more controlled settings. When we do so, theory, research, and practice begin to converge.

Practitioners of health education at once benefit from and are challenged by the multitude of theoretical frameworks and models from the social sciences available for their use, because the best choices and direct translations may not be immediately evident. The inherent danger in a book like this is that one can begin to think that the links between theory, research, and health promotion practice are easily forged. They are not. For the unprepared, the choices can be overwhelming, but for those who understand the commonalities and differences among theories of health behavior and health education, the growing knowledge base can provide a firm foundation on which to build. We find that one of the most frequent questions students around the world ask is, "*What theory should I use?"* It is an important question, the answer to which, we believe, will be found not just in the readings contained in this book but also in the experience and judgment that equip readers to apply what is learned here: *theory into practice and research*. We hope that *Health Behavior and Health Education* will provide and strengthen that foundation for readers.

Science is by definition cumulative, with periods of paradigm shifts that come more rarely as a result of crises when current theories fail to explain some phenomena (Kuhn, 1962). The same applies to the science base that supports long-standing, as well as innovative, health behavior interventions. More research is needed at all points along the research continuum. We need more basic research to develop and test theories, more intervention research to develop and test evidence-based interventions, and more concerted, focused attention to dissemination of evidence-based interventions (Rimer, Glanz, and Rasband, 2001; Weinstein, 2007; Rohrbach, Grana, Sussman, and Valente, 2006; Institute of Medicine, 2002). Moreover, both the research and practice communities in health education and health behavior are sorely in need of more rigor and precision in theory development and testing—in measurements, assessment of mediating variables, and specification of theoretical elements (Rejeski, Brawley, McAuley, and Rapp, 2000). We encourage more care and attention to how theories are tested, especially to the way variables are measured and analyzed. Building a solid, cumulative base of theory development is very difficult when one researcher's findings cannot be compared to another's.

The gift of theory is that it provides the conceptual underpinnings to well-crafted research and informed practice. "The scientist values research by the size of its contribution to

that huge, logically articulated structure of ideas which is already, though not half built, the most glorious accomplishment of mankind" (Medawar, 1967).

In this book, we aim to demystify theory and to communicate theory and theoretically inspired research alongside their implications for practice. We encourage informed criticism of theories. Only through rigorous scrutiny will our theories improve. The ultimate test of these ideas and this information rests on its use over time. Like any long-term behavior, this will require social support, supportive environments, and periodic reinforcement. The beneficiaries will be practitioners, researchers, and the participants in health education programs.

As this chapter and the preceding one demonstrate, health education and health behavior are concerns of ever-increasing importance to the well-being of humankind worldwide. As scholars, researchers, and practitioners, all of us grapple with the complexities of human beings and society. We press forward within the limits of current methodologies while striving to build a cumulative body of knowledge in a fast-changing world. Our efforts are not always successful, but this should motivate, not deter, us in pursuing high-quality work. Continual dialogue between theory, research, and practice involves compromise, creativity, healthy criticism, appreciation of others' skills, and a willingness to cooperate to learn and to set high standards. "We must learn to honor excellence in every socially accepted human activity, however humble the activity, and to scorn shoddiness, however exalted the activity. An excellent plumber is infinitely more admirable than an incompetent philosopher. The society that scorns excellence in plumbing because plumbing is a humble activity and tolerates shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water" (Gardner, 1984).

Limitations of This Book

No text can be all-inclusive. This is certainly true of *Health Behavior and Health Education.* Some theories and frameworks presented in previous editions of this book do not appear in this edition: Consumer Information Processing (Rudd and Glanz, 1990), Multiattribute Utility Theory (Carter, 1990), Attribution Theory (Lewis and Daltroy, 1990), and Media Advocacy (Wallack, 1990). These theories and frameworks remain important, but we found them to be less widely used than those included in this edition. We did not update the chapters in the third edition on communication technology and health behavior change (Owen, Fotheringham, and Marcus, 2002) and applying theory to culturally diverse and unique populations (Resnicow, Braithwaite, DiIorio, and Glanz, 2002). Rather, these issues are woven throughout various chapters in this edition. Interested readers should refer to the first and third editions of this book for coverage of these frameworks.

Other important theories and conceptual frameworks could not be included because of space limitations. These include Self-Regulation Theory (Leventhal, Zimmerman, and Gutmann, 1984), Protection Motivation Theory (Rogers, 1975), and more familiar classical theories such as field theory (Lewin, 1935) and cognitive consistency (Festinger, 1957). Some of these are described as part of the historical origins of the various theories discussed in this book. Others are discussed in the synthesis and perspectives chapters.

This book is not intended to be a how-to guide or manual for program planning and development in health education and health behavior. Other books in health education, nursing,

medicine, psychology, and nutrition serve that purpose, and readers should seek out key sources in each discipline for more on the nuts and bolts of practice. This volume will be most useful when it is included as part of a problem-oriented learning program, whether in a formal professional education setting or through continuing education venues. For examples of intervention strategies that use theories, the readers may want to look at such Web sites as The Guide to Community Preventive Services (http://www.thecommunityguide.org/). For specific programs and tools, the Cancer Control P.L.A.N.E.T. (http://cancercontrolplanet.cancer.gov/) and Research-Tested Intervention Programs (http://rtips.cancer.gov/rtips/index.do) provide examples relevant to cancer prevention and control. The National Registry of Evidence-Based Programs and Practices (http://nrepp.samhsa.gov/) is a searchable online registry of mental health and substance abuse interventions that have been scientifically tested and can be readily disseminated.

Neither is this volume intended to serve as an in-depth treatise on research methods in health behavior and health education. Instead, it demonstrates by example how theories are operationalized in a modest number of examples. The reader who wishes more guidance on applied research for studies of health behavior and education will find ample resources in books on social science research methodology and measurement in health behavior and education.

The editors intend that readers emerge with a critical appreciation of theory and with the curiosity to pursue not only the theories presented in *Health Behavior and Health Education* but other promising theories as well. Thus, *Health Behavior and Health Education* should be regarded as a starting point, not the end.

Summary

Theories—or conceptual frameworks—can be and *are* useful, because they enrich, inform, and complement the practical technologies of health promotion and education. Thus the readers of this book should "pass with relief from the tossing sea of Cause and Theory to the firm ground of Result and Fact" (Churchill, 1898). As the ocean meets the shore, so we hope you will find that theory, research, and practice in health promotion and education stretch out to converge in a single landscape.

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