CHAPTER 2

THEORY, RESEARCH, AND PRACTICE IN HEALTH BEHAVIOR

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 have long been regarded as opposites with irreconcilable differences. Within academic departments, there is often a hierarchical split between those who conduct theoretical work and those who pursue practice. Dewey attempted to resolve the dichotomy by focusing on similarities and continuities between theoretical and practical judgments and inquiries. He described *experimental knowing* as essentially 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, that is, research, as the ground between theory and practice and the testing of theory in action.

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 understanding health behavior and health behavior change. There is a tension between theory and practice that one must navigate continually, but they are not in opposition. Theory and practice enrich one another by their dynamic interaction. The best theory is informed by practice; the best practice should be grounded in theory. There is too little of both in health behavior. And as Green (2006) has written compellingly, there is also a need for more practice-based evidence. Researchers and practitioners may differ in their priorities, but the relationship between research and its application can and should move in both directions. There is a critical need for more "reflective practitioners," professionals who can ensure that theories and practice build on each other (Schön, 1983).

Among the most important challenges facing us is to understand health behavior and to transform knowledge about behavior into effective strategies for health enhancement. Research in 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 (Green, 2006). 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 aim 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 (research that tracks population-wide trends, including maintenance of change), and application and program delivery (Hiatt & Rimer, 1999). At the heart of this cycle is knowledge synthesis. Regularly 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, & Rasband, 2001). There is increasing recognition that, as Green has stated, "if we want more evidence-based practice, we need more practice-based evidence" (Green & Glasgow, 2006).

This fifth edition of *Health Behavior: Theory, Research, and Practice* aims to help health care providers, public health professionals, behavior change experts, and educators—whatever their backgrounds or disciplines—to understand some of the most important theoretical underpinnings of health behavior and to use theory to inform research and practice. The authors of this volume 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 between theory,

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Professionals charged with responsibility for improving 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 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 awareness, knowledge, attitudes, beliefs, or health behaviors; improved decision making; institutional norms; community integration; or more distal results, including morbidity, mortality, and quality of life. They may assess these results anecdotally, complete in-depth qualitative assessments, or conduct rigorous empirical evaluations.

The design of interventions that yield desirable changes can be improved when it is done with an understanding of theories of behavior change and an ability to use them skillfully in research and practice (Grol, Bosch, Hulscher, Eccles, & Wensing, 2007). Most public health educators and managers, and behavior change clinicians, 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 behavior change agent 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. In health behavior, the circumstances include the nature of the target audience and the setting, resources, goals, and constraints (Bartholomew, Parcel, Kok, & Gottlieb, 2006). There are a number of good planning models available to help professionals and communities decide which problems and variables to focus on and also help them understand key elements of the background situation (see Chapter Nineteen for examples).

An understanding of theory may guide users to measure more carefully and astutely in order to assess the impact of interventions (Glasgow & Linnan, 2008; Grol et al., 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 how to use the Transtheoretical Model 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 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 the Transtheoretical Model of change 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* events or situations. The notion of *generality*, or broad application, is important, as is *testability* (van Ryn & 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 (Blalock, 1969; Kerlinger, 1986). 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 & Michael, 1995; Sussman, 2001).

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?* and *how?* That is, 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 can also help to identify *what* should be monitored, measured, and/or compared in a program evaluation (Glanz, Lewis, & Rimer, 1996; Glanz, Rimer, & Lewis, 2002; Glasgow & Linnan, 2008).

Thus theories and models *explain* behaviors and suggest ways to achieve behavior *change*. Explanatory theories, often called a *theory of the problem*, help to describe and identify why

Table 2.1 Definitions of Theory

Definition	Source
A set of interrelated constructs (concepts), definitions, and propositions that presents 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, & Maslach, 1977, p. 53

a problem exists. These theories also predict behaviors under defined conditions. They guide the search for modifiable factors like knowledge, attitudes, self-efficacy, social support, lack of resources, and so on. 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; also see Chapter Sixteen). 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 through which changes occur in particular 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 some younger fields, theories specify the determinants governing the phenomena of interest." The term *theory* is used in the latter sense in *Health Behavior: Theory, Research, and Practice*, because this field is still relatively young.

As we discuss later in this chapter, many new theories and models have been and continue to be proposed in health behavior (Michie, West, Campbell, Brown, & Gainforth, 2014). 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 explanations for phenomena that could *not* be explained by prior theories, and identifies conditions under which the theory could be falsified. Another expectation of an established theory is that there should be a body of research testing it, and supporting it, by multiple scientists beyond the original developer(s).

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 (see Chapter Six); this 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 (see Chapter Five).

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 best, principles are based on accumulated research. In this 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. Principles should not be so broad that they invite multiple interpretations and are therefore unreliable. Nor should they be ambiguous so that they can be all things to all people.

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 & 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; also see Chapter Nineteen) and social marketing (see Chapter Nineteen) and ecological models (McLeroy, Bibeau, Steckler, & Glanz, 1988; also see Chapter Three).

Paradigms for Theory and Research in Health Behavior

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 constitute 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 can also 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 the science of health behavior (and in this text), the dominant paradigm that supports the largest body of theory and research is *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 testing (McGuire, 1983).

An alternative worldview that is also important in health behavior relies more heavily on induction and is often identified as a predominantly *constructivist* paradigm. This perspective argues that the organization and explanation of events should be revealed through a process of discovery rather than organized into prescribed conceptual categories before a study begins. 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 (Kendler, 2005; Strauss, 1987). It has become increasingly common in the health behavior field for work to originate in a constructivist paradigm and shift toward a focus on answering specific research questions using methodologies from the logical positivist paradigm. The use of mixed methods that include both qualitative and quantitative measures has gained traction in health behavior, psychological research, and other social sciences (Cacioppo, Semin, & Berntson, 2004; Creswell, 2013). However, without quantitative data, a theory is unlikely to be accepted.

Lewin's meta-theory stipulates the rules to be followed for building good theory. The rules are consistent with logical positivism but focus on his view that the function of social psychology is to further 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 it 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 analysis that starts with the situation as a whole, contemporaneity, a dynamic approach, a constructive method, a mathematical representation of constructs and variables, and a psychological approach that explains both inner experiences and overt actions from the actor's perspective (Lewin, 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 behavior. 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).

Ultimately, those who study and practice in fields that involve health behavior are generally concerned with approaches to solving social problems, and in many cases, solving some of the most significant threats and problems facing the world today. In other words, they are grappling with fundamental challenges of behavior change in the health domain. Considerable scholarly and practitioner effort has been devoted to developing techniques that change behavior. Although these efforts 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 many techniques for promoting individual behavior change (e.g., social support, empowerment, and personal growth) shifted focus to become 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 & Syme, 2000, p. 7). 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 are beginning to be more clearly articulated and studied (see Chapter Three).

Trends in Use of Health Behavior Theories and Models

Theories that gain recognition in a discipline shape the field, help to 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 for understanding and changing health behavior. Instead, one can choose from a multitude of theories.

Previous Reviews of the Most Often Used Theories

For the first four editions of this book, we reviewed a sample of publications to identify the most often used theories. 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 Theory of Reasoned Action, and the Health Belief Model (Glanz, Lewis, & Rimer, 1990).

To plan for the second edition of this book, we reviewed 526 articles from twenty-four journals in health education, medicine, and behavioral sciences, published from mid-1992 to mid-1994. Sixty-six 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/models were accounted for by the first eight: the Health Belief Model, Social Cognitive Theory, self-efficacy (Bandura, 1997), the Theory of Reasoned Action/Theory of Planned Behavior, community organization, the Transtheoretical Model/Stages of Change, social marketing, and social support/social networks (Glanz et al., 1996).

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 et al., 2002), ten theories or models clearly emerged as the most often used. The first two, and by far the most dominant, were Social Cognitive Theory and the Transtheoretical Model/Stages of Change. The remainder of the top ten theories and models were the Health Belief Model, social support and social networks, patient-provider communication, the Theory of Reasoned Action and Theory of Planned Behavior, stress and coping, community organization, ecological models/social ecology, and Diffusion of Innovations.

In a review of theory use in published research between 2000 and 2005, we found that the most often used theories were the Transtheoretical Model, Social Cognitive Theory, and the Health Belief Model (Painter, Borba, Hynes, Mays, & Glanz, 2008). Overall, the same theories found to be dominant in 1999 and 2000 were still dominant. Like previous reviews, this review revealed that dozens of theories and models were used, though only a few of them were used in multiple publications and by several authors. Some were minor variations of another theory. 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 & Oldenburg, 2001).

Updated Review of the Most Often Used Theories

There has been a continuing proliferation of theories and models up to the present. Rather than conducting a new literature review for the fifth edition of this book, we looked to published reviews. We identified several reviews that examined the use of theory for behavior change in specific behavioral categories, such as dietary change, cancer screening, and reducing sexual risk (Albada, Ausems, Bensing, & van Dulmen, 2009; Ammerman, Lindquist, Lohr, & Hersey, 2002; Gardner, Wardle, Poston, & Croker, 2011; Glanz & Bishop, 2010; Legler et al., 2002; Noar, Benac, & Harris, 2007; Noar, Black, & Pierce, 2009; Prestwich et al., 2013; Taylor, Conner, & Lawton, 2011; Webb, Joseph, Yardley, & Michie, 2010). A recently published compendium of behavior change theories, using clearly defined inclusion criteria, provides summaries of eighty-three theories and models (Michie et al., 2014). As these reviews assessed primarily individual outcomes of behavior change interventions, we also examined reviews of strategies for implementation and dissemination in health and mental health services (Powell et al., 2012; Tabak, Khoong, Chambers, & Brownson, 2012) and a review of social ecological contextual levels of health promotion interventions across a twenty-year period (Golden & Earp, 2012).

These reviews point to several key conclusions about the use of theories and models for health behavior change research. The first is the inescapable observation that there are *many* available theories and models. For example, the (acknowledged) selective review of eighty-three theories in Michie and others' book (2014); the sixty-eight distinct strategies identified by Powell and others (2012); and the sixty-one models included in Tabak and others' dissemination and implementation research review (2012). These theories and models are not mutually exclusive. As Tabak and colleagues have stated, "there is substantial overlap between models, as the included constructs are often similar" (2012). Review authors have used different coding schemes to classify the theories in their reviews. A novel approach taken by Michie and others (2014) to examine the interconnectedness of the eighty-three theories summarized in their book was to use network analysis methods to examine contributions, links, and patterns among the theories they describe.

Our synthesis of the various reviews, and the Michie et al. network analysis (2014), leads to the conclusion that, indeed, only a small number of theories and models have been widely used and/or have informed numerous other theories. In fact, those theories are the same ones

identified in the last three editions of this book: the Health Belief Model, Social Cognitive Theory (and Social Learning Theory, its predecessor), Theory of Planned Behavior (and Theory of Reasoned Action, its predecessor), social support, Diffusion of Innovations, and the Social Ecological Model.

A third issue in examining the use of theories and models for health behavior change is the level at which they seek to understand and/or influence behavior and its determinants (see Chapter Three). Golden and Earp reviewed 157 intervention articles published in the journal *Health Education & Behavior* (and its predecessor through 1997, *Health Education Quarterly*) between 1989 and 2008. They coded intervention levels of focus according to the Social Ecological Model and found that, across all settings, theories, topics, and time periods, the intervention strategies and targets for change were most likely to be at the individual and interpersonal levels, and were less often at the institutional, community, and policy levels (Golden & Earp, 2012). In contrast, Tabak and colleagues (2012) found that most of the models for dissemination and implementation research that they identified were distributed across all levels of the Social Ecological Model. The focus and scope of the two reviews was very different—with Golden and Earp looking at a single journal over time, and the Tabak review examining inherently multilevel issues (dissemination and implementation) across a wide range of sources. Viewing these contrasting findings through the interdisciplinary lens of health behavior research and practice, an important conclusion is that broader exposure across topics and published sources appears to be associated with greater application across multiple levels of study and intervention.

How Are Theories Being Used in Health Behavior Research and Practice?

Along with the published observations about *which* theories are being used, concerns have been raised about *how* 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 (Marsh, Johnson, & Carey, 2001; Rejeski, Brawley, McAuley, & Rapp, 2000) 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 (Michie et al., 2014). Considerable conceptual confusion—among both researchers and practitioners—about interrelationships among related theories and variables has also been observed (Rosenstock, Strecher, & 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 & Zimmerman, 2005; Weinstein & Rothman, 2005). The difficulty of reliably translating theory into interventions to improve clinical effectiveness has led to calls for more pragmatic trials, and increasing attention to the generalizability and translation of interventions into real-world clinical practice (Rothwell, 2005) and community settings (Rohrbach, Grana, Sussman, & Valente, 2006). These are reasonable questions that should encourage us all 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, p. 546), our review of theory used from 2000 to 2005 classified articles that employed health behavior theory along a continuum consisting of these four categories: (1) *informed by theory:* a theoretical framework was identified, but no or limited application of the theory was used in specific study components and measures; (2) *applied theory:* a theoretical framework was specified and several of the constructs were applied in components of the study; (3) *tested theory:* 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; or (4) *building/creating theory:* 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 et al., 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. Similar observations have been made by Michie and others (2014) as well.

Selection of Theories for This Book

Our selection of theories and models for inclusion in the fifth edition of *Health Behavior: Theory, Research, and Practice* was based on the published information summarized above, including an updated synthesis of reviews of theory use in the health behavior literature. Each of the most often cited theories and models is the focus of a chapter in this volume. They have been selected to provide readers with a range of theories representing different units of intervention (e.g., individuals, groups, and communities). They were also chosen because they represent, as in the case of Social Cognitive Theory, the Transtheoretical Model, and the Health Belief Model, dominant theories of health behavior and health behavior change. Others, like social marketing, Intervention Mapping and 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.

Our selection of theories also reflects some difficult editorial decisions. Three criteria helped us to define our selection. 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 research. (That is why, e.g., we include the Health Belief Model 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 important to bring to light.

In the later sections of the book, a purpose, theme, or focus rather than a theory is the identifying title for a chapter—as in the case of Chapter Thirteen, on interpersonal

communication, which describes theories of interpersonal communication and social influence and illustrates their utility for health behavior. Chapter Fifteen on community engagement and community organization is named for this approach to intervention strategies rather than for the convergent theoretical bases that form the foundation for community organization work. Chapters in Part Five present the Intervention Mapping and the PRECEDE-PROCEED Model for program planning, social marketing, and behavioral economics, 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. 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, models,* 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 Theory to Research and Practice: Building Bridges and Forging Links

Effective health behavior change 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 Health Belief Model may be useful. The Transtheoretical Model may be especially useful in developing smoking cessation interventions. When trying to change physicians' mammography practices by instituting reminder systems, dissemination and implementation science approaches are more suitable. At the same time, physicians might use the Transtheoretical Model to inform their discussions with individual patients about getting a first mammogram or annual screening. The choice of a suitable theory or theories should begin with identifying the problem, goal, and units of practice (Sussman & Sussman, 2001; van Ryn & Heaney, 1992), *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 backward to identify potential solutions.

The adequacy of a theory is most often 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 are also judged in the context of practitioners' and researchers' activities. Practitioners may apply the pragmatic criterion of *usefulness* to a theory and thus be concerned with its consistency with everyday observations. 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