

CHAPTER 1

KEY STEPS IN THE RESEARCH PROCESS

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Health promotion has become a cornerstone of efforts designed to prevent morbidity and premature mortality (Smedley and Syme, 2000). Indeed, many nations have embraced health promotion as an approach to enriching and extending the lives of their people. Core tasks of health promotion include the primary and secondary prevention of disease and health-compromising conditions. These tasks are reflected in two overarching goals established by the United States Department of Health and Human Services: to “increase the quality and years of healthy life” and to “eliminate health disparities” (Department of Health and Human Services, 2010). Of course, the broad scope of these tasks presents an enormous challenge to the discipline of health promotion. This challenge demands that the efforts and resources of health promotion practitioners be firmly grounded in the context of research findings.

To begin, it is important to state that health promotion research is the harbinger of effective health promotion practice. Accordingly, a great deal of time and attention should be devoted to research agendas before health promotion programs are designed and widely implemented. Moreover, successful research endeavors must ensure rigor, which is the hallmark of scientific inquiry. Rigor is properly thought of as a quantity—it exists (or fails to exist) in varying degrees. Although no study can be “perfect” in rigor, studies can have a high degree of rigor. As rigor increases, confidence in the findings also increases.

LEARNING OBJECTIVES

- Understand how the health promotion discipline constitutes a paradigm shift in terms of its emphasis on preventing disease.
- Understand the nine-step model and be able to apply this to your own research project.
- Understand the importance of rigor in health promotion research and how to achieve greater rigor.
- Consider issues in scholarship, grantsmanship, and ethics that are part of the research process.



Therefore rigorous studies have great potential to shape health promotion practice.

Although this book focuses on the application of research methods to health promotion, there are at least two frameworks that address the broader set of issues relevant to the conceptualization, design, implementation, and evaluation of programs. In particular, one framework, the RE-AIM model (Glasgow, Vogt, and Boles, 1999) can be used as both a design and an evaluation tool for health promotion planning. The acronym stands for five stages. The first is Reach, which represents the level of spread or diffusion of a health promotion program within a given population. The second is Effectiveness, which represents the utility of the program to make a difference when used in ordinary circumstances. The third is Adoption, which is the uptake of the program by health promotion professionals. The fourth is Implementation, which describes the fidelity of program use among those adopting it. The final stage is Maintenance, which represents the ongoing and correct use of the program such that substantial changes to morbidity and mortality can occur.

The second framework, the PRECEDE-PROCEED model (Green and Kreuter, 2005), is a comprehensive model for organizing the health promotion planning process from its inception to its widespread implementation and ongoing evaluation. This planning model is one that should be firmly understood by anyone engaged in health promotion and, by extension, anyone engaged in health promotion research. The two models are depicted in Figures 1.1 and 1.2, which provide overviews of their logic and utility for health promotion.

Without question, the rewards of health promotion research are the excitement generated by evidence-based conclusions along with the associated implications for widespread implementation and ultimately the effects on public health. We may think of health promotion research as a journey down the research highway that reveals insights into human behavior pertaining to health and wellness. This exploration into people's lives should never be taken for granted; indeed, the opportunity provides health promotion practitioners a partial blueprint for the design, implementation, and justification of behavioral and structural interventions.

As with any journey, however, there are many decisions to make and myriad options from which to choose. Each leg of this research journey will have consequences (both good and bad) and, depending on the path taken, may result in reaching a crossroads or even a dead end, so it is important to consider each decision point and plan your journey carefully. Because you may not have been on this type of journey before, you won't be expected to travel alone. We will be your tour guide for this journey, walking you through the research process, helping to identify salient points of interest, and warning you of any potential dangers.



**RE-AIM (Reach, Efficacy/Effectiveness, Adoption, Implementation, and Maintenance)****Brief Description:**

RE-AIM is a conceptual model to help identify key factors to implementation. It is a systematic way for evaluating public health interventions that assesses five dimensions: Reach, Efficacy/Effectiveness, Adoption, Implementation, and Maintenance.

Reach is the absolute number, proportion, and representativeness of individuals who participate in a given program.

Efficacy/Effectiveness is the impact of an intervention on important outcomes. This includes potential negative effects, quality of life, and costs.

Adoption is the absolute number, proportion, and representativeness of settings and staff who are willing to offer a program.

Implementation, at the setting level, refers to how closely staff members follow the program that the developers provide. This includes consistency of delivery as intended and the time and cost of the program.

Maintenance is the extent to which a program or policy becomes part of the routine organizational practices and policies. Within the RE-AIM framework, maintenance also applies at the individual level.

Figure 1.1 The RE-AIM Model

In this journey, the mode of transportation will be the methodological *paradigm* applied to your research. From the Greek word *paradeigma*, **paradigm** literally means model, pattern, or example; however, this rather simple definition can be expanded to encompass a “worldview” that may be influential in shaping the development of a discipline. A methodological paradigm is a discipline’s view of which research techniques and practices are promoted and should be practiced. A discipline’s methodological paradigm has strong implications for how the discipline as a whole will progress. Thomas Kuhn, a twentieth-century professor in philosophy and the history of science, is credited with popularizing the term *paradigm*. He wrote a provocative book, *The Structure of Scientific Revolutions*, in which he describes the history of science as being composed of “a series of peaceful interludes punctuated by intellectually violent revolutions” (Kuhn, 1970, p. 10), which can change profoundly the existing worldview and result in a paradigm shift. He articulated the importance of paradigms in shaping and guiding a scientific discipline:

A shared commitment to a paradigm ensures that its practitioners engage in the paradigmatic observations that its own paradigm can do most to explain. Paradigms help scientific communities to bind their discipline, in that they help the scientist create avenues of inquiry, formulate questions, select methods with which to examine questions, define areas of relevance, and establish or create meaning. A paradigm is essential to scientific inquiry [Kuhn, 1970, p. 142].

paradigm

a way of viewing the world around you; this includes the way in which disciplines conduct research



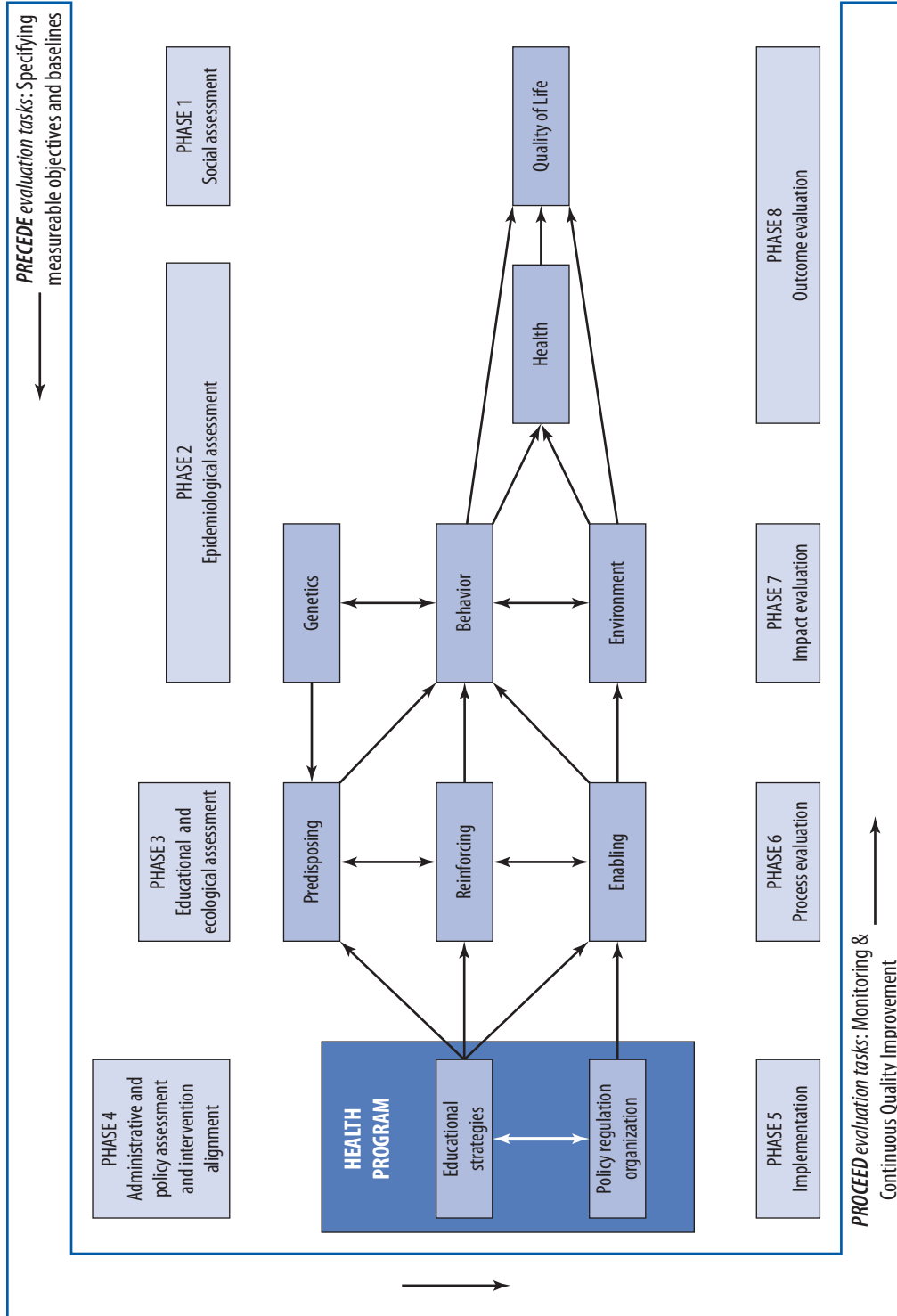


Figure 1.2 The PRECEDE-PROCEED Model

Source: Green & Kreuter (2005), with permission.



The establishment of health promotion as a discipline can be viewed as a paradigm shift in that health promotion researchers and practitioners place an emphasis on improving health and well-being and preventing disease, where previously the focus had been on treating disease. To truly have an impact on the health of the public, prevention requires a body of knowledge generated by rigorous research to help inform its efforts. As was ancient Rome, rigor is built “one brick at a time.” Fortunately, clear blueprints exist for building rigorous studies. In fact, successful research can be characterized by a series of well-defined steps, all of which are essential. Following the steps sequentially is equally important. In this chapter, we provide an overview of the research process (the “journey”) beginning with discovery of the idea; we then illustrate each of the essential and sequential steps in detail. We also emphasize the importance of the context in which the research process takes place. The result should be a keen understanding of the research process so that your journey will be a successful one.

Discovery

The research process in health promotion can be viewed as a process of discovering new ideas that can ultimately help improve the health and well-being of the public. This process of discovery is an **iterative process**, which means that each time a research question is addressed successfully, several new questions emerge. The diversity of potential research questions in any one aspect of health promotion creates an unending challenge (see Chapter Four for more detail regarding potential research purposes and questions). Research questions may appear quite humble yet demand rather complex and intense investigation efforts. Consider, for example, a question as simple as determining why people consume large amounts of saturated fats despite widespread awareness that these fats cause heart disease. An investigator could pursue cognitive reasons (for example, “those foods taste really good” or “those foods are satisfying”), social reasons (such as “most party foods are not healthy, but having fun is more important”), cultural reasons (for instance, “those foods are a tradition in our house”), or economic reasons (“fatty foods are usually more filling and less expensive than healthy foods”). An investigator could also approach the question based on perceived vulnerability of the study participants to the multiple forms of disease associated with a diet high in saturated fats (such as heart disease, stroke, obesity, and some forms of cancer). Obviously, then, the seemingly humble research question is actually an entire research career. In fact, successful researchers typically devote themselves to only one or two areas of inquiry. This focus enables them to use the findings from one study as a platform to formulate subsequent research questions for the next study, and so on.

iterative process
one in which a cycle of
discovery and revision
occurs several times





Mincus “Discovers” His Research Idea

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In addition to being a discovery process, health promotion research is also a public venture. Conclusions from health promotion research often have a direct impact on public health. For example, health promotion studies have shown that raising taxes on alcohol and cigarettes reduces consumption, which has led many states to adopt raising taxes as a form of public health intervention. Other studies have identified the individual and social determinants that contribute to vaccine acceptance (for example, flu, human papilloma virus), leading public health efforts to focus on reducing barriers such as cost or inconvenience to increase uptake of vaccines. Further, evidence suggests that people in malaria-affected

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As a public venture, then, discovery through health promotion research makes indispensable contributions to maintaining the health and well-being of society.

countries are more likely to use bed nets if social marketing programs work to influence perceived risk and change cultural norms. As a public venture, then, discovery through health promotion research makes indispensable contributions to maintaining



the health and well-being of society. In the following section, we illustrate this discovery process using tobacco use as the public health issue.

VIGNETTE: PREVENTING TOBACCO DEPENDENCE

Globally, the use of tobacco is a behavior that leads to multiple forms of **morbidity** (incidence of disease in a given population) and premature **mortality** (incidence of death due to a particular disease in a given population). Thus health promotion programs designed to prevent tobacco dependence among young people are strongly warranted. A substantial number of these programs seek to prevent youths from initial experimentation with tobacco. These approaches certainly have value; however, research suggests that among young people tobacco dependency may be an extended process, which may be amenable to intervention even after their initial use of the substance. Imagine, then, that you have been asked to determine the effectiveness (that is, the capacity to produce the desired effect) of providing structural interventions to youths who have recently begun to use tobacco but have yet to develop a physical dependence. A **structural intervention** is one that alters environmental factors such as policies and laws regulating tobacco rather than trying to alter individuals' knowledge, attitudes, and beliefs with a small group intervention. Ultimately both methods should shape tobacco use behavior, but they differ in their approach.

morbidity

the incidence of disease in a given population

mortality

the incidence of death in a given population

structural intervention

one that alters the environment to foster improved health

The Nine-Step Model or “A Journey Down the Research Highway”

The research process can easily become unwieldy. Even seemingly simple research questions may lead an investigator to wonder if he or she is on the right track with regard to the process. The process is very much analogous to a long road trip—one that can start out with a straightforward path (see Figure 1.3) but later may take some turns or detours and be fraught with danger, but nonetheless reach a desired destination. To streamline the thinking and actions involved in rigorous research, we have created a nine-step model.



Figure 1.3 Road Image



Choosing Your Destination

Step 1: Defining the Research Population. Given that the elimination of health disparities is a priority, health promotion research typically seeks solutions to problems that disproportionately exist among members of a defined population. Because population is a broad term and can be defined in many different ways, it is up to the researcher to specify the parameters that will describe the target population. For example, the researcher may define the population as “adolescents residing in low-income households, thirteen to nineteen years of age, residing in areas of dense tobacco sales.” Thus, as with any journey you ever take by driving, having a clear goal in mind before you get behind the wheel is essential. Deciding on the exact population that will become the recipient of your work is the equivalent of selecting where your destination will be when your journey comes to a successful end.

The process of defining the target population is far from arbitrary. Ideally, selecting the target population should be based on known *epidemiology* (the scientific discipline studying the distribution of disease in human populations) of the disease or health risk behavior under consideration. As shown in Figure 1.2, the PRECEDE-PROCEED model refers to this step as the Epidemiological Diagnosis and suggests that, generally speaking, health promotion programs should be delivered to epidemiologically defined populations on a prioritized basis. In other words, those with the greatest degree of burden—often expressed as the rate of disease per hundred thousand people—are served first.

Mapping Your Route

Step 2: Defining the Research Goal and Specifying the Exact Research Questions. This second step represents a turning point for the remainder

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of the research process. As a rule, narrow and precisely defined goals and questions are far more amenable to rigorous research designs than broadly defined goals and questions. At times, new researchers propose goals and questions that are far too broad to be addressed with ample rigor. An effective strategy to

avoid this pitfall is to thoroughly review the recent and relevant empirical literature. This can be a time-consuming process, but it is nonetheless time well spent. Engaging in this process will yield a clear picture of gaps in the



existing research. For new investigators, these gaps represent an opportunity to build on and extend the research literature, and they should be a logical focus of their subsequent research. Just as the process of thoughtfully planning and mapping out your journey can be time-consuming but well worth the investment, so too is the process of ensuring that your research question is firmly grounded in the existing literature. Once you have established a precisely defined research question, you can map out your ideal pathway of research.

Although conventional standards do not exist, from a practical standpoint many researchers restrict their review of the literature to the past five years. Online search engines such as Medline[®] and PsychInfo[®] are invaluable resources for the literature review process. A thorough review should include both articles directly related to the topic and those that are related tangentially. Directly related articles could include those that report findings from research designed to prevent tobacco dependence in new smokers, for example. Indirectly related articles could include those involving different populations and address broader issues such as use of other substances like alcohol or marijuana. When interpreting your review, it is important to assign a higher priority to directly related articles, whereas articles that are indirectly related should be applied judiciously.

Once the literature review is complete, a research goal can be formulated. The research goal is a general statement that conveys the purpose of the planned study. The research goal as stated in the vignette is "to determine the effectiveness of structural interventions for adolescents aged 13 to 19 residing in areas with high-density tobacco sales." The goal provides an overview of purpose and scope, but it lacks precision and specificity. Therefore we must go further by formulating research questions that provide the precision and specificity. Research questions are based on the research goal. In the given vignette, examples of a few appropriate research questions may include

Do laws prohibiting tobacco sales to adolescents effectively decrease their use?

How do adolescents view the risks of smoking?

What is the impact on adolescent tobacco use of an intervention that is meant to increase compliance among convenience store owners dispensing tobacco and located in these high-density tobacco sales areas?

Note that each question is a derivative of the overarching research goal. Each research question should provide information that serves the research



goal. This derivative approach to research questions ensures that research efforts are accurately directed. Research questions should be centered on a common purpose: the research goal. This practice sets the stage for the next step.

Choosing Your Ride

Step 3: Determining Whether the Research Should Be Observational or Experimental. Briefly stated, *observational research* refers to research in which variables are observed as they exist in nature—no manipulation of variables occurs. Observational research asks questions pertaining to “why people do what they do.” This form of research *does not involve* treatment or intervention, and in general, it is less involved and requires less time to implement and complete. Thus observational research is like driving a Ferrari as opposed to driving a semitruck pulling a heavy load. The journey for experimental research will be slower because this type of work involves implementing a health promotion program for a time period ample enough to yield changes in behavior or even disease incidence. However, this protracted journey is well worth the added time and investment. Once you arrive at your destination with the heavy load, the products of your trip will be valuable to the people in your chosen population.

Experimental research *does involve* manipulation of a variable (this could include education, policy changes, or changes in the environment). It builds on observational research by asking, “How can we help people achieve positive change?” and is the culmination of several observational studies. Developing and implementing effective interventions that serve the population of interest takes enormous time and effort, and, given the inevitable complexity, researchers should proceed at a slower pace. Experimental research is the type of research used to evaluate the effectiveness of interventions and is always concerned with the essential question of whether a given intervention program can produce outcomes of statistical significance and, even more important, practical significance.

Which Lane Are You In?

Step 4: Selecting a Research Design That Provides a Rigorous Test of the Research Questions. The choice of research designs is similar to choosing which lane you will be driving in and ranges from simple observational studies requiring relatively little time and generally manageable resources (think in terms of driving that Ferrari in the fast lane for this journey and arriving quickly at your destination) to complex experimental studies, which typically require several years to complete. Experimental studies require the use of extensive resources in addition to more time; thus the semitruck chosen



for this design must “stay to the right”—once you select your research design, you are committed to a given lane (and speed) in your journey.

The guiding principle in making the selection is parsimony. Parsimony implies that the need (that is, investigating the research questions) is met by a tool (that is, research design) that does the job well, without going beyond that which is necessary.

Figure 1.4 shows a graph of research designs that describes the time and resource requirements of various forms of health promotion research. These designs are described in greater detail in Chapter Four (observational designs) and Chapter Five (experimental designs). At the Y-intercept, relatively simple research designs can be seen. Examples include qualitative studies and cross-sectional studies. As the level of complexity increases, the time and resource requirements increase linearly and include designs that necessitate the maintenance of a *cohort* (a **cohort** being a sample of research participants) over multiple assessment periods. A *cohort study* is synonymous with the terms *panel study*, *longitudinal study*, or *prospective study* and is located mid-level along the trajectory of increasing complexity. Similarly, various levels of complexity exist among experimental designs, which are located toward the upper right end of the trajectory. The phrase “randomized controlled trial (RCT)” denotes a true experimental design located near the peak of the trajectory. Figure 1.4 also shows that

cohort
a sample of study
participants being
followed over time

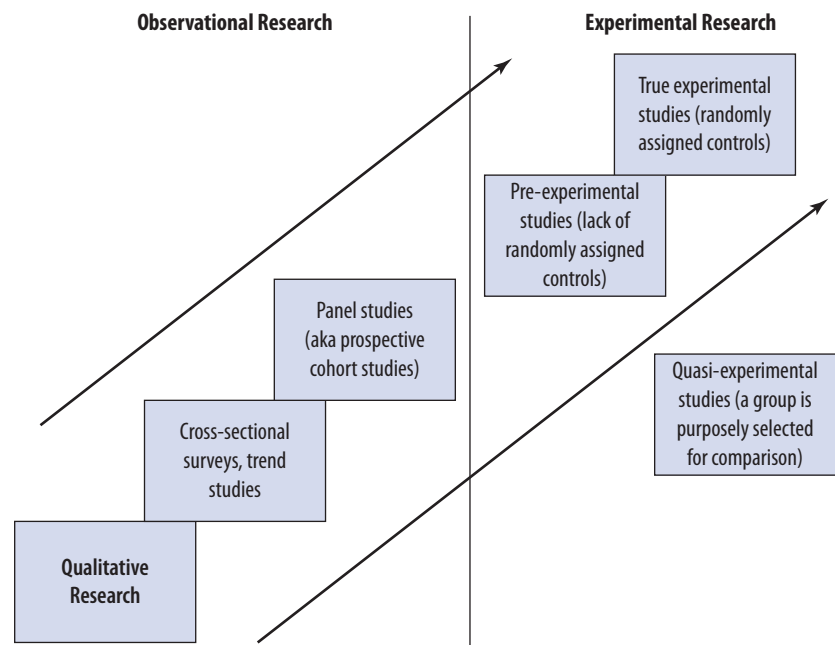


Figure 1.4 Research in Health Promotion: Resource Requirements





internal validity
the degree of control an investigator exercises over the condition of an experimental design

quasi-experimental designs are located at the peak, as these experimental designs are often necessary in health promotion involving structural-level or community-level interventions. For instance, in the research study targeting convenience store compliance with tobacco policies, only the quasi-experimental design is appropriate for determining effectiveness, because randomizing convenience stores to the intervention group within the high-density areas might create a form of contamination, a threat to internal validity. **Internal validity** refers to the degree of control an investigator exercises over the condition of an experimental design. In other words, adolescents residing in these high-density areas might learn that some stores are “cracking down” on the sale of tobacco while others are not, thereby affecting the outcomes.

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Designs located to the left end of the trajectory serve as the building blocks for subsequent research questions that can then be addressed by progressively more complex designs.

As a rule, research should be constructed with designs that approximate the trajectory shown in Figure 1.4. That is, designs located to the left end of the trajectory serve as the building blocks for subsequent research questions that can then be addressed by progressively more complex designs.

Stopping for Snacks

Step 5: Determining the Variables That Must Be Measured. First and foremost, the immediate goal is to be absolutely sure that every *variable* required for a rigorous study is identified. A variable is anything that changes, meaning it must assume a range of values. The research question and the literature review will inform variable selection. For example, suppose that the literature review indicated that minors can often easily purchase tobacco from convenience stores when the manager is off-duty (nighttime hours). Therefore it would be incumbent upon the researchers to record the time of day when participants purchase or attempt to purchase tobacco, in addition to other critical variables. Just as you would stock up on things to eat and drink during a rare chance to pull over on your drive, you have to carefully stock up on all of the variables that you may need when you analyze your data in the future. Selecting the right mix of variables (correlates/predictors, mediators, moderators, and outcomes) is a tricky task only because once your study has begun you cannot go back and annex questions to the assessment modules. In essence, you have just one chance to gather all that you will need.



The way in which the variables are measured is equally important. Indeed, rigor is dependent on the selection of reliable and valid measurement instruments. Like research, measurement is a process. It involves identifying appropriate measures, adapting existing measures to your unique research question, or creating new measures. Chapter Seven provides further discussion of measurement issues in health promotion research.

Some variables may be measured directly using a physical instrument (for example, a sphygmomanometer for blood pressure, or a scale for weight), whereas other variables, such as level of skill applying a condom to a penile model, can be measured only through direct observation. In health promotion research, most variables are measured indirectly using participants' self-reports. A mode of administration (for example, paper and pencil, face-to-face interview, or computer-assisted self-interview) must be selected based on previous knowledge of the research population and the nature of the previously identified research questions.

The process concludes with pilot testing designed to ensure that measures are appropriate for the planned study population. The pilot test also allows researchers to evaluate the psychometric properties of the self-report measures that purport to represent a **construct**. Constructs are intangibles described as concepts representing things that are not directly observable, as opposed to tangibles such as height or mass. Therefore constructs would be considered abstractions. Examples of constructs used in health promotion research include self-esteem, depression, and self-efficacy.

construct
intangible described as a concept representing something that is not directly observable

Do You Take the Bypass or Continue?

Step 6: Selecting the Sampling Procedure. As in other aspects of the research enterprise, there are choices to be made among numerous sampling procedures as you conduct your research. Sampling exists across a continuum of complexity and rigor. The sampling procedure employed is one of the most critical determinants of *external validity*. **External validity** refers to the ability to generalize study findings to the population of individuals with similar characteristics represented in the study sample. It should be noted, however, that not all research studies need to use a sampling procedure that yields high external validity. Although taking the time to engage the use of probability sampling techniques (much like driving through a congested city) will enhance the external validity of your study, the use of non-probability methods (taking the bypass) may be far more prudent and well worth the loss of external validity.

external validity
the ability to generalize study findings to the population of individuals with similar characteristics represented in the study sample

Sampling should also include specifying the number of study participants. This number is selected based on a *power analysis*. Stated simply,

**power analysis**

estimate of a statistical test's capability to find true differences between variables or between groups of study participants

a **power analysis** estimates the ability of a statistical test to find true differences between variables or between groups of study participants. Although a study's power is determined by multiple factors, sample size is one of the most important determinants. Planned sample sizes that provide inadequate power are crippling to the overall study. In the vignette, for example, a power analysis may suggest that each of the three study conditions should have one hundred participants. Having fewer participants in each condition could severely jeopardize the power of the study. More detailed descriptions of sampling procedures are presented in Chapter Six.

Is Autopilot a Good Idea?

Step 7: Implementing the Research Plan. A basic requirement of *internal validity* is consistency in the implementation of all study protocols. *Internal validity* implies that the study is not confounded by design, measurement, or poor implementation of study procedures. Protocols spell out key procedures such as the sampling procedure to be used, how participants will be assigned to intervention conditions, when and where assessments will occur, who will provide the assessments, what participants will be told or not told about the research study, and how reticent participants will be enticed to return for follow-up programs or assessments. Because protocols are generally quite detailed, subtle departures from these detailed plans can be a common problem and may throw you off your planned route. Over time, however, this deviation can amount to substantial changes in the way late-entry participants are treated as compared with those enrolling earlier in the study. Based on this list of concerns, you can quickly see that a primary obligation of the researcher is to constantly ensure that the study protocols are followed in a precise manner. Far from simply waiting for the data to be collected, the best researchers avoid the temptation of placing their study on "cruise control," as doing so will inevitably lead to problems. The best researchers develop systems that constantly monitor their progress and provide periodic (such as weekly or monthly) feedback on progress, emerging issues, and clear-cut problems. These systems are comparable to using a GPS to guide your continued travel on the road to research. One key advantage of being vigilant about the journey as it progresses is especially apparent in intervention studies, in which a phenomenon known as **drift** can occur. Drift occurs when research staff make subtle (unauthorized) changes to the intervention procedures. These small changes may become magnified over time and therefore cause the original intervention plan to morph in a substantial way.

drift

a phenomenon that occurs when research staff make subtle (unauthorized) changes to the intervention procedures

As an example of drift, consider the study of preventing tobacco dependence outlined in this chapter. The protocol specifies that convenience store





owners in an entire geographic area will be the recipients of an intervention designed to enforce laws regarding tobacco sales to minors. Conversely, the comparison area will not receive this program. As one might imagine, however, the program may be applied inconsistently in the intervention area, and it may even be used to some degree in the comparison area by a staff member who is well-intended but less than committed to study rigor. The inconsistency in the intervention area is especially problematic, as this threatens the external validity of the study. Other common forms of drift include deviations in how assessments are administered (perhaps research assistants change the way they perform interviews) and departure from sampling protocols. Fortunately, drift can be averted by vigilant attention to an established set of quality-assurance procedures. Ultimately, then, the principal investigator is the one person who must be accountable for implementing these procedures, thereby ensuring that drift does not occur.

Arriving at Your Destination

Step 8: Analyzing the Data. Your journey, even if it occurred in a Ferrari, has not been an easy one, so when you finally reach the destination (a complete dataset), you'll want to be sure that you will benefit from your work. In other words, do what you came to do—fulfill the goal of the trip. Once all the assessments have been conducted, a dataset can be established. The dataset consists of the variables measured for each participant. The dataset is, of course, quite valuable, as it can subsequently be used to answer the research questions that were formulated in step 2. After the data are checked for logical inconsistencies (called "cleaning"), the research process becomes dependent on the statistical skills of the research team. Again, parsimony is important at this step—the goal is to perform an analysis that provides a rigorous and fair test of the research questions while avoiding the introduction of artificially imposed procedures.

In the tobacco study vignette, a parsimonious analysis would be to simply compare the mean number of cigarettes sold in defined geographic areas, before and after making the interventions designed to enforce a no-purchase law for minors. If the intervention was successful, then a noticeable drop in sales should occur for that geographic area, whereas the same drop should not occur for the location designated as the comparison area. Suppose, for example, the means are 15,769 cartons sold in the intervention area before the program began and 12,234 after it had been in place for 3 months. This precipitous drop suggests that the program worked. However, to rule out a trend caused by something other than your program, you then must look at sales for the comparison area. Those figures are 15,234 and 14,993, respectively. The decline in means can be



compared using a very simple test (a one-way analysis of co-variance), which answers an essential question: Are the declines in means a function of the interventions or are they a function of chance? Chapters Fourteen through Sixteen provide more detailed discussion of data analysis.

Creating Your Slideshow and Sharing with Family and Friends

Step 9: Disseminating the Findings. Although memories from your trip will stay with you forever, it is important to document your journey for others. Just as you would want to show family members and friends where you went on your trip (and how you got there), a research journey deserves equal attention. In fact, the process of historically chronicling your journey is a longstanding tradition when it comes to research. Rigorous research clearly warrants widespread dissemination, and this is achieved through oral presentation of findings (at professional meetings) and through peer-reviewed publications. Indeed, this step elevates the project from a work in progress to a lasting scientific contribution. Like each of the previous eight steps in this chapter, step 9 is also a process unto itself. The rudimentary starting point in this process is transforming the analytic results into carefully articulated findings.

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Findings are answers to the research questions that are generated by the data analysis. The findings must be considered in the context of related research by showing how they strengthen or extend previous work. At this juncture, it is important to know that null findings or statistical analyses that were nonsignificant can be just as important as significant findings with respect to building the research base. Regardless, the study should have a high degree of rigor.

Moreover, the findings may raise additional questions that bring the research process back to its origin. Figure 1.5 illustrates this point. Inspection of the figure shows that research is an iterative process. Every time a research question is asked and answered, another question or set of questions becomes apparent. New researchers should be aware that their research debut (initial entry into this iterative process) is likely to be difficult, but that repeated cycles become progressively less difficult. In fact, this observation may explain why health promotion researchers often tend to specialize in a narrowly defined field of study (such as prevention of adult-onset diabetes, prevention of HIV infection among women, or promoting Pap testing among Latinas), as doing so enables them to

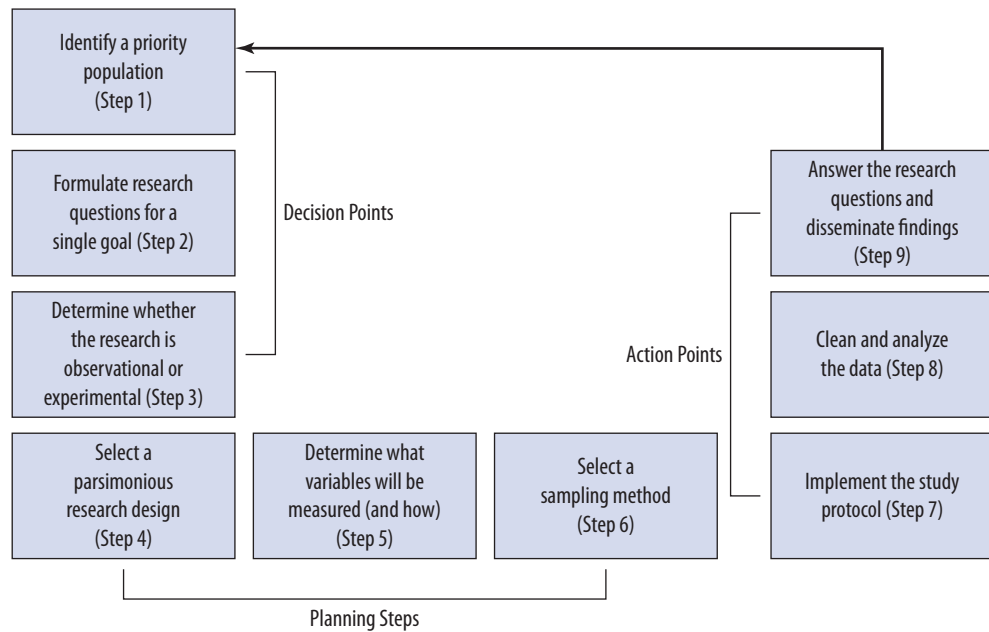


Figure 1.5 Schematic Illustration of the Nine-Step Research Process

develop a body of research and make significant contributions to the knowledge base in their area.

After the researcher (or research team) has successfully answered the research questions, the remaining task is to prepare written and visual (that is, tables and figures of study results) summaries of the research process (steps 1 through 8)—not unlike the infamous slideshow or photo album. Recall from step 2 that research is a collective process; therefore, disseminating the results adds to the larger empirical knowledge base. Fortunately, the preparation of written and visual summaries does not have to be a daunting task. In fact, when rigor is high, this task can be very satisfying and enjoyable. The task is primarily a historical account of the rationale underlying the research questions and the protocols used to answer these questions. Researchers customarily bring the task to a close by suggesting subsequent research questions that could be investigated to further strengthen and expand the research base.

Dissemination of the research findings is a key part of the scientific process. The written and visual records can be disseminated through multiple channels. Oral presentation of

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the findings at professional meetings is generally a first step. These presentations create opportunities for informal peer review of the research and study conclusions, a valued and vital aspect of the scientific process. Submission of the written summary to an appropriate professional journal provides opportunity for formal peer review.

The Context of Health Promotion Research

The research process occurs in a context characterized by scholarship, grantsmanship, and vigilant attention to ethics. Scholarship and grantsmanship are described in depth as part of Chapters Seventeen and Eighteen, respectively. Ethics in research will be introduced early in this book (Chapter Three). These three principles are highly valued in the health promotion profession. Scholarship implies that the researcher possesses an inherent curiosity regarding the research questions and a dedication to expanding the knowledge base in health promotion. Integrity is a key feature of scholarship. Like rigor in the research process, integrity in the researcher ensures a fair test of the research questions. Integrity implies that any preconceived desire to prove or disprove study hypotheses is not allowed to interfere with the research process. The research process is quite eloquent in that it forces objectivity; however, adherence to the process is based on the self-report of the researcher, making integrity vital.

Grantsmanship is also a vital part of the research process (see Chapter Eighteen for more details on the grant process). Rigor is often expensive, and obtaining funds for health promotion research is typically a competitive process. In addition to other factors (for example, quality of the research proposal, the relevance of the topic and the population, and so on), grant awards, to some extent, are given based on the current degree of engagement in the iterative process shown in Figure 1.5.

Vigilant attention to ethics is the most critical of the three concerns briefly described here (see Chapter Three). Just as practitioners of medicine take the Hippocratic Oath, health promotion researchers must adopt the principle, “First, do no harm.” Moreover, health promotion research is highly regulated by local and federal organizations that protect the rights of research participants. The nature of health promotion research demands studies of humans, and these studies are oftentimes directed at very personal (and therefore protected) behaviors.

Summary

Health promotion practice and policy should be based on rigorous research. This chapter has provided a sketch of the research process as it applies to





health promotion. This sketch can be used as a platform to gain competence and proficiency in each of the nine steps described. Competence and proficiency in scholarship, grantsmanship, and ethics should be an equally high priority. The remainder of this volume is devoted to expanding this sketch into a more complete primer of health promotion research methods.

KEY TERMS

Cohort	Morbidity
Construct	Mortality
Drift	Paradigm
External validity	Power analysis
Internal validity	Structural intervention
Iterative	

For Practice and Discussion

1. Read a journal article that reports original findings from an empirical investigation of a research question of interest to you. Be sure to read this from cover to cover, very carefully. As you read, please make notes regarding whether the article reports information pertaining to each of the nine steps described in this chapter. Which, if any, of the nine steps was not described in this article? Of the information provided, please briefly describe (a) the study population, (b) the research question, (c) whether this was observational or experimental, (d) the research design that was used, (e) the measures employed, and (f) the sampling plan that was used.
2. Find a colleague who is also learning from this same textbook and discuss with him/her the following question: Is it more important to identify the study population first or the research question first? A bit of background to this question may help—some researchers maintain that the choice of a population is subservient to the larger choice of the research question (which implies that steps 1 and 2 in the nine-step model are reversed). Conversely, other researchers contend that the goal of public health is to rectify disparities experienced by identified populations. With this background in mind, attempt to come to a consensus with the colleague and then compose a one-paragraph justification for your answer.



3. The ninth step of the model may well be the most critical. With this in mind, use the Internet to search for the key term *publication bias*. Learn all that you can about this form of bias and then answer the following two questions.
 - a. What are journals currently doing to avert this problem?
 - b. For studies that are not acceptable by reputable journals, what obligations do the researchers have relative to step 9, and how can these be met?
4. As you have learned by reading Chapter One, research is a complex undertaking, fraught with pitfalls and barriers to success. Given this reality, consider the question of whether a single study should be used to create a shared dataset (one that—with permission—can be used by other investigators). Then prepare a one-page opinion on this question that may be read in class (or posted online) for your course colleagues (and professor) to consider. In your written opinion, please include possible drawbacks of shared datasets and potential issues that may arise as a result of this practice. It will be equally important to expound on the advantages of shared datasets and the obligation to disseminate findings.

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