There typically are a wide variety of attitudes (and emotions) associated with reading about research and potentially conducting research by graduate students. You may be excited about taking a research course, or you may have considerable concern and apprehension. Also, you may place considerable faith in scientific knowledge, or you may question reports of research outcomes. The variety of attitudes and emotions that students in education and counseling have mirrors the general population in many respects. Across the centuries, there have been frequent attempts to improve the plight of humankind, and frequently, these efforts have focused on the use of research to do so. However, most recent advances in science have been most dramatic. Little (2006) stated, “During the last fifty years science and invention have led us further and further from the world that was; deeper and deeper into a new environment. The process of change has been so rapid that readjustment has been difficult. Yet readjust ourselves we must” (p. 54). Science and scientific advances have been purported to be critical in promoting the well-being of individuals and in societal functioning (Frye, 1965; Mendelsohn & Nowotny, 1984). Padgett (2004) noted that “faith in the scientific method has been the rock solid foundation of technological advances” (p. 1).

The words science and research have significant meaning in our current world. According to Padgett (2004), our society has had a love–hate relationship with science. This love–hate relationship may be found in various aspects of our lives. The entertainment industry provides good examples of this conflicted relationship. Science and research have been depicted both positively and negatively in movies and on television. Star Trek, the Six Million Dollar Man, Ian Fleming’s James Bond books and movies, and other media presentations have frequently portrayed science in a positive light. Conversely, Frankenstein and even Jurassic Park are examples of science and research being presented as potentially out of control and creating problems. Al Gore’s
movie *An Inconvenient Truth* presents how human efforts in science (creating a greenhouse effect through technology) have impacted our world and potentially may lead to major changes in Earth’s ability to sustain life. The debate over the greenhouse effect also demonstrates the range of societal views on the value of science (Nisbet & Myers, 2007). For example, trust and acceptance of research on global warming are mixed (Nisbet & Myers, 2007). Nisbet and Myers (2007) cite recent surveys that U.S. public opinion shows that about 60 percent believe that global warming is real, whereas another 40 percent do not share this view and question the research on this topic.

Modern science has a long history, more than 400 years, starting in the mid-1600s with scientists such as Isaac Newton and Galileo introducing major advances in scientific knowledge and methods (Okasha, 2002). More recently, the advent of the telephone, electricity, and computers (the Internet), along with advances in medicine (genetic engineering), are examples of how science has changed and (theoretically) improved our lives. In fact, today, there are probably few places you can go or activities you can engage in and not come into contact with advances achieved through science and research. Most recent scientific advances have occurred in neuroscience and cognitive sciences (Okasha, 2002). In fact, recent advances in neuroscience and cognitive sciences have resulted in specific applications to education and counseling (Goswami, 2006; Patton & Campbell, 2011). Decisions in our society made by government and other social institutions are typically based on scientific research outcomes. Finally, you cannot read a newspaper on a daily basis without coming across reports of scientific advances.

**DEFINITIONS OF RESEARCH**

The terms *science* and *research* have been defined in various ways, but there are common elements to the definitions. Best and Kahn (2003) defined science as “an approach to the gathering of knowledge rather than a field or subject matter” (p. 6). They further described science as consisting “of two primary functions: (1) the development of theory and (2) the testing of substantive hypotheses that are deduced from theory” (p. 6). Gay, Mills, and Airasian (2012) defined the scientific method as “an orderly process entailing a number of steps: recognition and definition of a problem; formulation of hypotheses; collection of data; analysis of data; and statement of conclusions” (p. 5). The connection of science to research is found in the application of the scientific method (Ary, Jacobs, & Sorensen, 2010; Gay et al., 2012). Creswell (2012) defined research as “a process of steps used to collect and analyze information to increase our understanding of a topic or issue” (p. 3). Common elements of science and research include acquisition of
knowledge, a systematic approach, and an objective analysis with opportunities for conclusions about how our world may function. The ultimate goal of research and science is to obtain knowledge useful in understating how our world operates. Cooper (2012) discussed five ways humans tend to make decisions about what is true. These include information about truth given by authority, tradition or history, personal observation, the use of rational analysis, and the scientific method. Cooper suggested that the first four methods may lead to errors in detecting truth, whereas the scientific method is based on a combination of rational analysis and observation that make the process more objective and likely to lead to discovering truth.

Moore (1983) described different approaches we use in obtaining knowledge that is not based on the scientific method such as personal experience, tradition, expert opinion, authority, and church–state scholarship. He noted that the use of these methods of obtaining knowledge is fraught with subjective bias. The conclusion he suggests we reach is that using the research method reduces such subjective bias. Ary and colleagues (2010) also have identified similar sources of knowledge that do not use the scientific method. One frequently used source of knowledge is experience (Ary et al., 2010). We may even trust our experience more than what may be presented in scientific journals. A second source of knowledge, according to Ary and colleagues (2010), is authority, and we frequently seek out the advice of those who have particular expertise, such as lawyers, physicians, and others who hold high levels of expertise in a specified body of knowledge. In our everyday lives we make decisions, some of which are based upon scientific information and some that are based on personal experiences and other sources. In fact, there are decisions we make that do not call for an objective systematic approach (the scientific method), for example, what cereal to eat in the morning or what color to paint a bedroom. However, most in the fields of education and counseling believe that use of the scientific method is critical in the practice of our professions (Spencer, Detrich, & Slocum, 2012).

Salkind (2006) proposed that there are a number of elements of quality research. For example, he noted that quality research (1) can be replicated, (2) is generalizable to other settings, (3) is based on a reasonable rationale and linked to a theory or theories, (4) is not based upon political beliefs, and (5) is objective. Gall, Gall, and Borg (2002) suggested that there are four different types of knowledge, and these various types of knowledge can be clearly linked to certain research approaches. The four are description, prediction, improvement, and explanation. Knowledge viewed from a descriptive approach may be interpreted to consist of attempts to describe natural, social, or psychological events. The key to descriptive knowledge is a focus on assessment, which allows descriptions of identified events to be made. In counseling, this may involve, for example, a description of the specific characteristics of an emotional condition, such as obsessive–compulsive
disorder. In education, an example of knowledge from a descriptive view might be how a teacher interacts with children based upon gender in a classroom.

Knowledge based on a predictive view involves developing ways to predict identified outcomes (Gall et al., 2002). For example, in education, we may want to predict success in a particular type of educational program, such as an advanced placement course in biology. In counseling, we may want to predict who may benefit most from a particular treatment approach, such as a posttraumatic stress treatment, for example, a virtual reality technique; we need objective knowledge that allows us to predict effectively.

Another type of research knowledge, improvement, involves developing information designed to determine the effectiveness of interventions (Gall et al., 2002). For example, in education, we may be interested in knowing the effectiveness of mainstreaming students with disabilities. An example from counseling might be an interest in the effectiveness of a specific counseling approach—the cognitive behavioral approach, for example—with a condition such as a posttraumatic stress.

The fourth and final type of research knowledge, according to Gall and colleagues (2002), is explanation. This type of knowledge may be the broadest of all and subsumes the others. Typically, researchers frame questions and problems in terms of theories or explanations of phenomena. For example, behavioral theory may be a basis for explaining a child’s tantrum behavior and the reinforcement sequence developed within a particular environment. Researchers would use the theory to establish research studies to support or refute components of the theory.

Although the research method clearly, inherently does reduce subjective bias, I want to caution against complete acceptance of the notion that research is always objective and never biased. Babbie (2011) suggested that there are four types of errors in inquiry. The four are inaccurate observation, overgeneralization, selective observation, and illogical reasoning. Inaccurate observation can occur easily when humans are asked to use their senses to document outcomes. For example, inaccurate observation may occur in research investigations, especially if the investigators are not careful in their procedures. Overgeneralization may occur particularly when conclusions are based on limited information, small sample sizes, and not larger samples from the population (Babbie, 2011). These conclusions are made with the intent of suggesting the findings are general patterns and insight into explaining a general pattern or explanation for an outcome. For example, an educational researcher may make conclusions about an innovative math program using expensive technology tested on a small sample, a sample that is characterized by selection from an upper-middle-class community. The researcher may overgeneralize and conclude this math program could be used with any population of children, for example, lower-income communities that may have limited technology resources.
Gall and colleagues (2002) suggested that another potential criticism of research is that, inevitably, the researcher’s own biases and selection of what to observe create problems. This is the error of selective observation (Babbie, 2011). Babbie noted that, when one bases research on broad theories, it may be possible that the researcher seeks to confirm research outcomes based on the theory. Consequently, the research may seek evidence to support the theory even when the results do not actually fit the theory. Researchers have found that we, as human beings, have a tendency to quickly decide upon a hypothesis and then gather information to confirm it rather than seek alternative hypotheses (Pottick, Kirk, & Hsieh, 2007; Strohmer, Pellerin, & Davidson, 1995). The last error in inquiry, illogical reasoning, concerns conclusions that may be based on individual idiosyncratic views or interpretations (Babbie, 2011). For example, an individual may interpret results from a counseling study on teaching a stress-reduction method and conclude it is effective because of the time of day of the training.

The important question to address is whether the research method does provide more objectivity in gaining knowledge about our world. Kelly (1955), a personality theorist, stated that a major motivation for human beings is to be a good scientist, and being a good scientist involves making accurate predictions about events. A major tenet of psychology is that we, as human beings, inherently like to predict and control our lives. Scientific and research methods may ultimately provide one of the better ways to be a good scientist and make good predictions, particularly when we make professional decisions. Being a good scientist professionally may be achieved in part through our ability to systematically evaluate the efficacy of the scientific and research process and the information present in professional journals used in practice.

**PRACTITIONER–SCIENTIST**

In counseling and psychology, there has been a relatively long tradition of graduate-level training from a scientist–practitioner orientation (Forsyth & Leary, 1997; Gelso, 2006; Hinkin, Holtom, & Klag, 2007; Hoshmand & Polkinghorne, 1992; Kram, Wasserman, & Yip, 2012; Lane & Corrie, 2006; Leong & Zachar, 1991; Nelson & Neufeldt, 1996; Stoltenber, McNeil, & Elliott, 1995; Vespia, Sauer, & Lyddon, 2006). Goldfried (1984) suggested that a profession based on a scientific approach is in a better position to be considered legitimate. The scientist–practitioner model was developed by the American Psychological Association (APA) in 1947 (Bernstein & Kerr, 1993). The basic concept is that those practicing the profession of psychology, and also counseling (Bernstein & Kerr, 1993), would split their time and focus rather evenly between research and practice. However,
as Heppner, Kivlighan, and Wampold (1992) noted, the reality may be a much
different ratio, more like 75 percent practice and 25 percent research, based on
need and interest. Most practitioners have been dissatisfied with heavy emphasis on
scientific methods and knowledge, using the ideal model of 50 percent research and
50 percent practice. Love, Bahner, Jones, and Nilsson (2007) discussed the relevance
of research in psychology or counseling: “Research advances knowledge in the
field of psychology and often guides clinical practice, yet very few psychologists
conduct research after graduate school” (p. 314). Gelso (2006) noted that students
entering graduate programs typically are interested in practice and not in conducting
research, and this is manifested in the low productivity of research by those who
complete graduate counseling and psychology programs.

Education has not had the history with the scientist–practitioner model, but
recently, there have been efforts to consider how such a model can be implemented
in education (Apel, 2011). Kamhi (2011) suggested that school personnel cannot
truly use the scientific approach and model because they function and practice
based upon a perspective of certainty. Essentially, Kamhi noted that practitioners
who hold consistent and certain views of how they should practice are not using a
scientific approach. He contends that a scientific approach involves the careful bal-
ance between certainty and uncertainty. We know what we know because of experi-
ence, but can one be open and consider other options to explain events? Science
is based to a certain degree of uncertainty, and as Kamhi noted, being in a state
of uncertainty causes individuals to pursue additional knowledge and informa-
tion, possibly collected based on the scientific method. We want to have questions
answered, and science provides a good model to answer questions, particularly in
a systematic way. However, Apel (2011) argues that educators can use the scien-
tific model in practice if they embrace an attitude of uncertainty. This attitude of
uncertainty is characterized by a desire to seek to solve a problem. An attitude of
uncertainty in science is defined by a problem with a hypothesis. A hypothesis is
a tentative guess about phenomena or events. What this means is that, rather than
knowing with certainty how to set up discipline in the classroom, a teacher using
an attitude of uncertainty establishes or thinks in terms of a hypothesis. As Apel
noted, most practitioners do not like to admit they are uncertain or do not know;
many times, educators (and counselors) are encouraged during preservice training
(academic preparation) to behave and act definitively. An alternative approach, the
scientific approach, is to treat difficult situations (where one does not know) by
using a hypothesis. In essence, the educator or counselor develops hypotheses to
test out in practice to solve problems and attempts to employ systematic methods
(gather data and evaluate particular interventions or instructional methods).

Manicas and Secord (1983) attempted to differentiate the tasks of the scientist
and the practitioner by stating, “The former practices science by creating at least
Chapter 1 ♦ Science and the Research Process

partially close systems; the latter uses the discoveries of science, but . . . also employs a great deal of knowledge that extends beyond science” (p. 412). They were stating that practitioners use not only science but other forms of information, such as personal information, in the practice of their professions. Consequently, I like the term practitioner–scientist to more appropriately reflect the realities of how many master’s-level-trained counselors and educators use and participate in research. The emphasis is on practice first, with the use of research as a foundation for conducting practice. Others also have used the term practitioner–scientist/researcher (Bernstein & Kerr, 1993). As Heppner and colleagues (1992) noted, the use of science in practice does not need to be evenly split. Practitioners will most likely choose to emphasize practice with science as a source of knowledge for treatment decisions rather than conducting research or being the researchers who gather the knowledge. Hunsley (2007) noted the different terms utilized from the original scientist–practitioner view to include practitioner scholar or clinical scientists.

Heiman (1995) stated that “psychology is as much a science as the natural sciences of physics, chemistry, or biology because they all employ the scientific method” (p. 5). This statement by Heiman can be applied to education also, as long as the scientific method is employed. So, what differentiates a scientific approach from a nonscientific approach? The definition of science and several assumptions about science provide this answer.

ASSUMPTIONS ABOUT SCIENCE AND RESEARCH

Heiman (1995) cited several important assumptions about science that may be helpful in understanding the difference between scientific activity and nonscience. A basic premise of research and science, according to Heiman, is that one can find lawfulness in the subject studied (e.g., psychology or counseling and education). Lawfulness in our disciplines, counseling and education, is determined by the extent to which we can find ways to predict and control events. For example, we may hypothesize that, when a client in counseling describes a certain psychological reaction, such as an obsession with cleanliness, and is always washing his or her hands, the client has an obsessive–compulsive personality. Consequently, we can hypothesize and predict to some degree how the person will react in the future. In education, an example may be teaching a child reading with certain methods of instruction, for instance, phonics or whole word, and we may predict that one method of instruction will be better than another based on research outcomes.

A second important assumption, according to Heiman (1995), is that nature is understandable. This means that the laws of nature are understandable, and we
can explain them in some way based on a theory. Understanding from a research perspective refers back to an explanation, which is a major goal of the scientific approach (Gall et al., 2002). Gall, Gall and Borg (2006) proposed that researchers employ different theoretical orientations in the search for explanations. Three orientations may be used by investigators in their attempt to explain natural or social and psychological phenomena: mechanistic, postpositivistic, and scientific realism. The mechanistic approach has been a major orientation of scientific research since the 1800s and consists of developing scientific explanations from a cause-and-effect relationship. If a bowler rolls a bowling ball down a bowling alley and it hits the pins, the assumption is that the ball caused the pins to fall. There is a direct relationship between two or more events: the ball rolling and hitting the pins and the pins falling. An example in education may be an adolescent taking an advanced placement course, and consequently, he or she does well on college entrance exams.

The postpositivist approach, according to Gall and colleagues (2002), involves an assumption that individual perceptions of the social environment and an event influence how they behave: There is an interaction between the person’s perception and certain phenomena. To concretely illustrate this orientation, we can go back to the example of encouraging a child to study and complete his or her work, and the result is a high grade. According to the postpositivist view, the child’s interpretation and the meaning attached to getting a high grade will have a significant impact on the outcome. Consequently, the explanation for a particular event or phenomenon is not a simple cause-and-effect relationship. Children may interpret a high grade in a different ways; some may consider a B a good grade, whereas others may be satisfied only with an A.

The scientific realism view for explaining events states that the world is composed of layers of causal structures. Some of the causal structures are easy to observe, while others are not as easy to observe (Gall, Borg, & Gall, 1996). The job of the researcher is to identify the various causal structures and how they interact to produce an effect. The following interpretation may be made if we again return, using the scientific realism view, to an example of a child studying to receive a high grade. Not only does the grade influence the outcome, but the events prior to studying have influence as well. For example, did the child’s parents have a fight prior to the child starting to study? The student may have just received a high grade in another subject, and this motivates him or her to work hard on the current topic. The job of the researcher using the scientific realism approach is to identify the relevant causal structures influencing the event or phenomenon being studied. The scientific realism view is an attempt to move research beyond a laboratory and into the real world, where events are complex and not based on simple cause-and-effect relationships.
Relevance of Using and Applying Skills in Evaluating Research

The importance of using and applying skills in evaluating research is founded on the classic view of the scientist–practitioner model. As I mentioned earlier, if you read a large daily newspaper on any given day, you will find reports and summaries of scientific research studies. However, the newspapers do not publish specifics of the studies or information about how the study was conducted. An important question is this: How much credence should you place on the information you read in such sources? Additionally, if you have a copy of the study, do you accept the results unequivocally because they are published in a professional journal? I would suggest that accepting the results of a scientific study without systematically evaluating the methods is analogous to buying something, for instance a car, without ever test-driving it. Few of us would buy a car or a house without first systematically evaluating the quality of the item being purchased. Consequently, I believe we as professionals have an obligation to carefully evaluate knowledge and research results that may be used in the practice of our professions. I am not suggesting that you evaluate each piece of knowledge presented to you in a comprehensive fashion (this would be extremely tedious and probably impossible), but I believe that acquiring the skills to evaluate how knowledge was generated is a key to functioning as a professional and differentiates those with advanced graduate degrees from those who are not so trained. Most recently, counseling and psychology influenced by medicine has introduced the use of evidence-based practice (American Psychological Association, 2006; Tanenbaum, 2003). Evidence-based practice is focused on the identification and use of the best research available in the implementation of services. Love and colleagues (2007) concluded that “one of the most important goals of psychological research is to provide guidance and answers for clinicians with practical, relevant, and useful information that will enhance their ability to practice effectively, ultimately providing more sound services to clients” (p. 315). The use of evidence-based practice as a model provides counselors with a foundation for decision making and services that are more systematic and theoretically more ethical. Few people want to see a physician who does not use the most current research to guide his or her practice.

STEPS IN THE SCIENTIFIC PROCESS

Science and research are based on a systematic approach and proceed according to specific rules. I want to describe the generally accepted steps in the scientific research process and relate these steps to the sections of a journal article. I also want to note that an important step in the research process is that, ultimately, the procedures used in a study will be presented in a public arena such as a professional...
journal or a professional presentation, so the methods can be evaluated as to their efficacy. The steps to scientific research are depicted in Table 1.1.

### PURPOSE AND OVERVIEW OF THE TEXT

A major purpose of this text is to provide a framework for practitioners in the fields of counseling and education to use in systematically evaluating the efficacy of scientific research reported in professional journals so that the information may be used and applied in practice. In other words, one goal of this book is to prepare counselors and educators to be good consumers and users of scientific research. This will be partly accomplished by relating the scientific research method to journal articles and providing a guide for evaluating counseling and educational research. The format of a research article may easily be related to the scientific method through the steps described earlier (Table 1.1). A research article is typically composed of four major sections: introduction, methods, results, and discussion (Table 1.2).

A second purpose of this text is to provide the basic skills necessary to professionally practice as a practitioner–scientist from a systematic and, when appropriate, a scientific approach. The completion of this purpose involves a discussion of how to conduct research. A basic overview of how to participate in and conduct research is presented. Contributing to the professional counseling and educational
Another goal of this book is to provide an introduction to program evaluation. Also, I provide information about program evaluation—how to systematically evaluate interventions used. Steps in conducting program evaluation are discussed, as are various types of program evaluation, such as formative and summative evaluation. There is a presentation of an example of a program evaluation to illustrate the process.

The last goal is to inform the reader of current and future issues confronting those conducting and using research in the fields of counseling and education. As was mentioned earlier, there is a controversy over the designation of training graduate-level practitioners as scientist–practitioners or as practitioner–scientists. Another issue (and this is discussed in early chapters) is the use of quantitative versus qualitative research. The last issue addressed is the use and conduct of research sensitive to cultural diversity. We live in an extremely diverse society, and the use of research in a responsible and sensitive manner based on cultural and diversity issues is critical. Ignoring culture and diversity is irresponsible in research and may result in its misuse.

To accomplish the goals cited, this text (the third edition) is organized around three major sections: Introduction to the Research Process, Evaluating Articles in the Professional Literature, and the Application of Research and Evaluation.
Section I: Introduction to the Research Process, includes the first 10 chapters. The first chapter is an overview of the research process and the third involves updating references and the scientific process. An example is a discussion of the value of science in our current society. Chapter 2 is an introduction to searching for journal articles and the use of electronic online databases. Additionally, there are additional examples of plagiarism and an addition of a section on professional writing and use of APA format. The third chapter is a basic overview of statistical methods. It includes a discussion of descriptive, inferential, correlation, and regression methods. Students have commented to me that the examples are helpful and they would like more examples, so more are included in this third edition. Chapter 4 is an overview of a certain category of research, quantitative research, which is defined in terms of results and data being quantifiable. Most standard research designs may be categorized as quantitative research, and most professional journals publish primarily quantitative research rather than other types, such as qualitative research. As part of this chapter, there is a presentation of various research designs that may best characterize this type of research. There are limitations to the quantitative approach, and these are presented. Chapter 5 is a discussion of qualitative research methods and includes research approaches such as case study, phenomenological, grounded theory, and ethnographic methods. Qualitative methods provide opportunities for investigators to do more naturalized observations of the actual object of study versus the more experimentally controlled approach used in quantitative methods. Limitations of the qualitative approach are discussed in this chapter. Additional examples of qualitative research studies are provided in this third edition. Chapter 6 presents the basics of qualitative research data analysis. There is discussion of the sequence of how researchers systematically analyze qualitative data.

Chapter 7 involves a discussion of mixed research methods. The development of mixed research has provided a link between qualitative and quantitative research methods. These two traditions, quantitative and qualitative, have had significant differences over the past 100 years. There have been recent efforts to develop systematic mixed methods designs, which have led to more integration of the approaches. I discuss the benefits of employing mixed methods in research. There are additional examples of mixed methods studies to illustrate the various approaches here. Chapter 8, a new chapter for the third edition, is focused on single-case research designs. There are discussions of the strength and limitations of single-case study. Additionally, there are discussions of when to use single-case study designs. Both the threats to internal and external validity are covered. Also discussed are specific single-case study designs such as multiple baseline, ABAB designs, between-group designs, and multiple treatment designs. Subsequent chapters involving critique of articles, including new examples of...
single-subject studies. Chapter 9 is a focus on evidence-based research practice. As was mentioned earlier, the importance of using evidence-based practice as a model is increasingly being acknowledged as a critical component of becoming an effective counselor (Slocum, Spencer, Detrich, 2012; Tanenbaum, 2003) or educator (Spencer et al., 2012). There is a discussion of the strengths and limitations in using an evidence-based practice approach. Last, there is a discussion of the best way to practice using an evidence-based model (Davison & Lazarus, 2007). Chapter 10 focuses on ethics in the research process. The primary focus of the discussion is on the appropriateness of interpreting and applying results from one specific sample in the literature to a different group of subjects or in practice. Guidelines for interpreting the impact of research results on the population are presented, and studies from the research literature are used to illustrate how to evaluate ethical concerns. For example, there is an evaluation of the Tuskegee Syphilis Study with African American males, using the proposed guidelines. The purpose of the Tuskegee study was to determine the natural course of untreated syphilis. The researchers in this study used 400 African American males who were left untreated for syphilis, even when effective treatment was available. The third edition involves an update of examples of current ethical research issues and an expansion of discussion of ethical misconduct in research. Examples such as manipulation of data will are provided, for example, Anil Potti and manipulation of cancer research data.

Chapters 11 through 17 comprise Section II: Evaluating Articles in the Professional Literature and provide a foundation for systematically evaluating the efficacy of articles presented in the professional counseling and educational literature. The section of evaluating articles involves updating examples used in illustrating how to effectively evaluate articles. As stated earlier, students have reported that additional examples are always helpful. Chapters 11 through 17 are focused on evaluating articles, and new examples illustrating how to evaluate the articles have been added to each chapter. Also, each chapter includes a qualitative study that was not provided in previous editions. Finally, there are examples from single-case research in each chapter and discussion on how to evaluate the studies based on the criteria provided. Chapter 11 is the beginning of the major focus of this text: a presentation of guidelines for evaluating the efficacy of research reported in journal articles. Methods for evaluating each section of a journal article are presented, starting with an article’s introduction. To clearly illustrate how to evaluate the various sections of a journal article, there are examples taken from the counseling and educational research literature. The introduction section of an article includes the development of the argument or the rationale for conducting the study cited; this is frequently accomplished through a review of the relevant literature. Methods for evaluating the literature review are presented here. Chapter 12 is a discussion
of how to evaluate the purposes and hypotheses statements that are also a part of the introduction section. The purpose statement and hypothesis (or hypotheses) are typically found toward the end of the introduction section, after the literature review. The purpose statement should be clear and concise as to what the study and researchers are investigating, whereas the hypothesis is more specific and gives information about any predictions the researcher is making. The next chapter, Chapter 13, focuses on the second section of a journal article, the methods section, beginning with samples or subjects used in the study. A discussion is included on how to evaluate the selection procedures used and the appropriateness of the particular sample based on the purpose of the study. Chapter 14 is an examination of how to evaluate the procedures used and described in the methods section. The procedures are a step-by-step description of how the study was conducted. Chapter 15 is a discussion of how to evaluate the third part of the methods section, the instruments. Investigators must decide how to assess the outcomes of the focus of the study and use valid and reliable methods. Guidelines for evaluating the results sections are the focus of Chapter 16. The results section generally involves the presentation of statistical methods used in the analysis of the study. It is not unusual for students in counseling and education to skip or skim over this section because of an aversion to numbers and math or statistics. The ability to evaluate the results section is not based solely on knowledge of statistical methods, and the evaluation approach introduced here is rooted in general concepts and assumptions that can be reviewed without significant expertise in statistics. Chapter 17, the last chapter in the discussion of the evaluation process of a research journal article, is the discussion section. This is where the researchers summarize the results of the study in descriptive form and attempt to generalize and relate the results to actual practice in counseling and education.

Section III: Application of Research and Evaluation is a discussion of how to develop and use research in actual practice for those in the fields of counseling and education. The discussion is presented from the practitioner–scientist approach. In Chapter 18, I provide a brief overview of how one goes about developing a research proposal. The discussion includes how to conduct small research studies as a practitioner, with particular emphasis on using the professional literature as a basis of design and implementation. Both quantitative and qualitative research designs are discussed. The chapter is updated with relevant references. As with other chapters, additional discussion of using single-case research is introduced as an option particularly relevant for practitioners interested in conducting such research. Chapter 19 addresses program evaluation. Counselors and educators may be asked to interpret and develop program evaluation. Program evaluation is quite useful to practitioners because the focus is on evaluating the effectiveness of the programs they are implementing and providing justification for
continuing such programs. Program evaluation knowledge and skills seem particularly important in recent times of fiscal conservatism and accountability. The purpose here is to provide only an overview of the process of program evaluation and not to provide and in-depth review; there are other texts designed to provide a more detailed explanation (Padgett, 2004; Sanders, 1994; Thyer, 2005; Wholey, Hatry, & Newcomer, 2004). The third edition involves updates that include adding new examples of program evaluations in various settings, for example, schools, agencies, and higher education institutions (Hernandez, 2012).

Chapter 20 is new in the third edition and is focused on the use of technology in research. Advances in technology provide interesting and significant opportunities for conducting research that has not been available in the past. There is a range of technologies that enhance the opportunities for research. For example, one is the use of virtual worlds such as Second Life. Second Life is a virtual environment that allows for the virtual experience of social and educational experiences. The benefits of using a virtual world in research is that one can control the environment in much greater detail than in real life involving humans. Also, research participants can engage in social interactions that would be more challenging in real life, for example, visiting another country and interacting with residents from that country. Another example of using technology in research is the use of low-current electrical stimulation to treat many conditions such as learning disabilities, stroke, depression, posttraumatic stress disorder (PTSD), schizophrenia, and so on. A third technology is the use of “bug in the ear” for supervision of teachers in a classroom. Current technology allows for video streaming into a classroom and supervision at a central site. Such technology can be particularly helpful in training teachers and supplement faculty contact with student interns.

The last chapter, Current and Future Issues in Counseling and Educational Research (Chapter 21), is a discussion of the current and future issues confronting those conducting, and particularly those using, counseling and educational research (Brunoni, Nitsche, Bolognini, et al., 2012; Schwartz & Revicki, 2012). For example, the issue of conducting research that is sensitive to cultural diversity is a current dilemma in the field. Another controversial issue is accountability in counseling and education. How can research be done to address such issues?