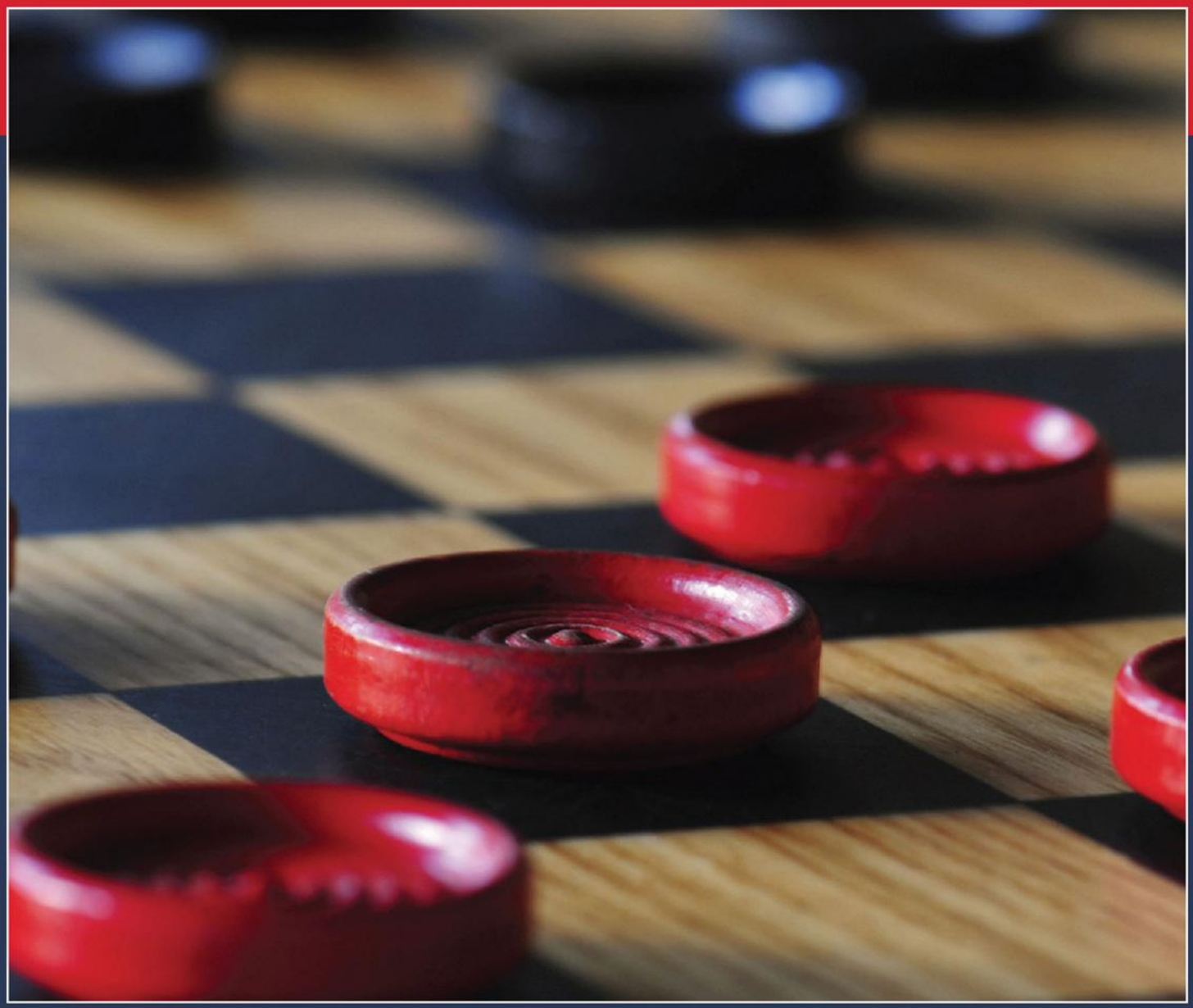
Debra S. Osborn | Vernon G. Zunker

Using Assessment Results *for* Career Development

Ninth Edition



Using Assessment Results

Career Development

NINTH EDITION

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PREFACE

Pleasure in the job puts perfection in the work.
—Aristotle

Dream-makers. This is one of the main roles of career practitioners. We create an environment that is safe and accepting, and we provide tools for clients to identify and give voice to their dreams. Finally, we help them identify the steps necessary to turn those dreams into reality.

It is not always the case, though, that the dream is apparent to the client. Sometimes, the starting point is in helping the client identify, understand and appreciate the unique aspects that make them up as an individual. This is the role of career assessment. Too often, clients (and sometimes counselors) want to take a test because it is the fast way to land a list of potential occupations. But career assessment is personal assessment, and involves both a standardized look at the individual along with personal reflection.

We begin this book with the introduction of a model for using career assessments. To use career assessments effectively, a career practitioner should couch them as part of the career advising process. It is not a one-shot deal. Just as career counseling techniques are grounded in career theory, how a practitioner uses a career assessment should be a reflection of his or her theoretical perspective.

We cover several types of career assessments in this book, providing detail on a handful of inventories for each chapter, and then a brief description of other inventories at the end of the chapter. We describe and review individual tests and provide sample protocols that may be used by career practitioners. These reviews cover a description of the instrument, its purpose, some technical information, where to find other extensive reviews, and case studies. Our principal motive in writing this book has been to provide practitioners with a tool for understanding how to use a variety of inventories in counseling. The case studies offer examples of how each instrument can be introduced and how the results can be interpreted. Each chapter also features a list of suggested activities and questions so that readers may apply the information to practical situations.

CHAPTER 1

A CONCEPTUAL MODEL FOR USING ASSESSMENT RESULTS

Career counseling is both an art and a science. Deciding if, when and how to incorporate the use of assessments into the process can be complicated, involving factors such as the client's needs and the reason/desired outcomes for testing. A practitioner might choose to have a client complete an inventory as part of their session, or as an activity for the client to complete outside of the session and to bring for discussion at the next meeting. With many inventories being online, it is plausible that clients might come to their first session with results in hand from a reliable, or in some cases, a questionable virtual inventory.

A recent (2014) online search in the Mental Measurements Yearbook yielded 96 test results for the word "interests" alone. If you did a search on abilities, skills, values, or decision, you'd add substantially to that list. If you expand that to an Internet search on any of those terms, the number of related sites is in the hundreds of thousands. The ever-increasing number of sophisticated assessment instruments requires that career practitioners continually upgrade their skills in using assessment results to meet the demands of a wide range of individuals. Being a regular consumer of test reviews, journals, professional associations and even professional social media groups (e.g., there is a "Career Assessments" as well as a "Career Counselor Technology Forum" group in LinkedIn) will ensure that you are up to date with information relevant to career assessments. With the multitude of available inventories on the market, career practitioners are challenged to understand and apply the statistics associated with test data into meaningful information.

As an integral component of the career counseling process, assessment is also changing and growing in complexity. For instance, computer-assisted career guidance programs and online testing have grown in popularity. Career service providers must be aware of potential errors and misleading results or inappropriate interpretations of computer-generated statements or results from a questionable inventory or career quiz that was taken virtually. In the next section of this chapter, the practitioner's responsibilities associated with using standardized assessment instruments will be emphasized, along with suggestions for improving the general use of assessment instruments.

We recognize from our current perspective that the use of assessment results for career counseling have gone through significant changes that are thoroughly discussed in a number of textbooks, including *Career Counseling: Applied Concepts of Life Planning* (Zunker, 2014). No doubt the use of assessment for career counseling will make further changes in the 21st century, along with advances in technology and refinement of career counseling models.

Advanced Organizer

In this chapter, we will cover the following topics:

- Conceptual Perspective: Career Development Through Assessment
- Rationale for Assessment
- Preparing the Practitioner for Using Assessment Results
- A Model for Using Career Assessments in Career Counseling
- Using the Model for Individual Career Counseling: A Case Example
- Using Career Assessments to Stimulate Career Exploration in Groups
- General Overview of the Book
- Summary
- Questions and Exercises

Conceptual Perspective: Career Development Through Assessment

In early counseling approaches, assessment results were used primarily as analytical and diagnostic instruments (Prediger, 1995). A general transition from trait-and-factor approaches in career counseling practices to an emphasis on life stages and developmental tasks has created a different perspective for practitioners using assessment results. For instance, in career decision-making approaches, assessment results are considered as only one facet of information. A practitioner uses other sources of information such as what the client shares, and observations about how the client is sharing (are they getting excited when talking about making a difference or shifting uncomfortably when talking about getting additional education). Career theories also suggest key information that should be discussed in a career counseling session and for specific career needs (e.g., initial choice, transition, job loss). These may include self-esteem, the impact of negative thinking on career decision-making, values, as well contextual issues such as cultural influences, poverty, and socioeconomic status, and even mental health concerns such as depression or anxiety. With all of these,

assessment results are used to stimulate dialogue about important issues involved in finding an occupational fit, and they are used to encourage individuals to evaluate themselves, including their self-concepts and their self-efficacy development. While in mental health settings, assessment results are used to support diagnoses, more often with career counseling, assessment results are used as a tool to promote career exploration, identify barriers to decision making, and enhance discussion, rather than serving as the primary or sole basis for decisions. They can also help counselors determine what type of intervention will be most meaningful to a client. For example, and introverted client would most likely prefer to do online research about a career option while an extraverted client might be more excited and gain more information from a networking event. Most importantly, we believe that the client should be an active participant in the discussion about their career concerns.

The increasing complexity and diversity of assessment results suggest the need for a systematic model that will permit practitioners to make an effective analysis of the assessment procedures and results appropriate for specific counseling needs. This chapter discusses a conceptual model for using assessment results in career counseling, followed by suggestions for how practitioners can improve and sharpen their skills when using standardized assessment measures. In addition, we present a rationale for using assessment results before discussing the use of a model in individual counseling. Finally, we illustrate how the model can be used to stimulate career exploration among groups.

Rationale for Assessment

In this model, the use of assessment results is conceptualized as a learning process emphasizing the development of self-knowledge. Identification and verification of individual characteristics are the main information provided by assessment results. This information is used with other information in career decision-making. Although assessment results are used in a variety of ways, career practitioners are encouraged to look beyond the score report to facilitate meaningful learning experiences that will enhance self-awareness and lead to effective career exploration and ultimately, successful career decision making.

Thus, assessment results should be only one kind of information used in career counseling. Testing and interpreting score reports should not dominate the counseling process. Other factors, such as work experiences, grades, leisure activities, skills, attitudes toward work, as well as contextual issues such as cultural influences and external demands should receive equal attention. A counselor should always be aware of the mental health status of the person with whom they are working. If a client is struggling with depression or highly anxious, this will likely impact how they approach an assessment, and how they receive the interpretation of the results. Assessment results are best used when they can contribute information that is relevant within this overall context.

The process is complex in that individuals must consider their own values, interests, aptitudes, and other unique qualities in making decisions. Although the method of career decision-making is a relatively easily learned skill, one's application of the scheme involves considering one's complex and unique characteristics. The process usually begins when an individual recognizes a need to make a decision and subsequently establishes an objective or purpose. Then the individual collects data and surveys possible courses of action. Next the individual uses the data in determining possible courses of action and the probability of certain outcomes; estimating the desirability of outcomes centers attention on the individual's value system. The final step involves individual decisions that require specific courses of action. Possible outcomes should be specified and evaluated for optimal fit with an individual's personal characteristics. Individuals with the same objectives (e.g., I want to choose a career that fits my interests, or I want to find a job) will undoubtedly reach decisions by different paths based primarily on personal values and self-knowledge.

Case Example: Sari

Brown (2002) reviewed other examples of decision models. Some models specifically use assessment results to identify and clarify individual characteristics in order to enhance the decision process. For example, Sari, a high school senior, is attempting to decide which college to attend. She collects information concerning entry requirements, costs, faculty/student ratios, academic programs, and other data from five colleges. Using assessments of her skills and abilities, she weighs her chances of being accepted by the colleges under consideration and the probability that she will be able to meet academic requirements at those institutions.

In determining a major at the college chosen, Sari considers results of value inventories. These are among the questions she asks herself: "How much do I value a high salary? And if I do value a high salary, which college major would most likely lead to a high-paying job?" Values assessment is essential for making satisfactory decisions here. She also considers where her family has attended college, and how close geographically she wants to be to them. She decides to visit her top choices, and is also paying attention to her "gut feeling" when there. After Sari selects an institution and major, she once again evaluates the possible outcomes of the decision. In sum, decision-making requires the client's self-knowledge of abilities, interests, values, relevant past experiences, cultural and familial influences, emotions, and the application of this

knowledge to the consideration of alternatives.

Information is a key variable in making an effective career decision (Peterson, Sampson, Reardon, & Lenz, 2002). For Sari, tests that measure scholastic aptitude and achievement were used with other data such as earned grades, feedback from others, and her internal feelings to make adequate predictions. These assessment results provided support information that is not easily attained by other means, such as through interviews or from biographical data. Assessment data have the distinct advantage of stimulating discussion of specific individual characteristics that can be linked to educational and occupational requirements. However, you can see the benefit of having both assessment results and other information to help Sari as she weighs through her decision.

Preparing the Practitioner for Using Assessment Results

Throughout this book, we urge the practitioner to inform each client about the purpose of testing and how the results match the goals set out by the practitioner and the client. Thus, the practitioner must be well informed about each measurement instrument used in the client's career development counseling.

Ethical guidelines for using tests responsibly are outlined by several professional associations, including the American Counseling Association, the Association for Assessment and Research in Counseling, the National Career Development Association, the Alliance of Career Resource Professionals, National Board of Certified Counselors, and others. These guidelines describe standards for test selection, administration, interpretation and management, and should be carefully reviewed and followed. In addition, the following are some more strategies for learning about measurement instruments:

1. Take the instrument yourself. Have a trained professional review your results.
2. Thoroughly read the professional manual.
3. Administer the instrument to a friend or colleague. Practice explaining the purpose of the instrument.
4. Look for any flaws in how the instrument is administered.
5. Learn to interpret the instrument by going over the results of a friend or colleague with them.
6. Practice going over the interpretive report and seek additional information to make scores more meaningful. Consider whether it would be helpful to create a summary page, or to highlight certain terms.
7. Search educational journals or even the developer's website for empirical research using that inventory.
8. Join relevant social media boards of practitioners using career assessments, or follow the publishers' social media sites to keep abreast of updates.
9. Attend trainings at professional conferences or webinars on the career assessments that you use often.

By following this general approach, the practitioner can build both skills and confidence in identifying appropriate assessments, and then administering and interpreting the test and results.

A Model for Using Career Assessments in Career Counseling

The effective selection and implementation of assessment tools in career counseling can best be attained by using a conceptual model. Such a model provides a systematic method for establishing the purpose of testing and the subsequent use of assessment results. To be operationally effective, a model must be flexible enough to meet the needs of a wide variety of individuals in different stages of their lives. In essence, a model should provide guidelines that are applicable to individuals at all educational levels, in all population groups, of both sexes, and of all ages.

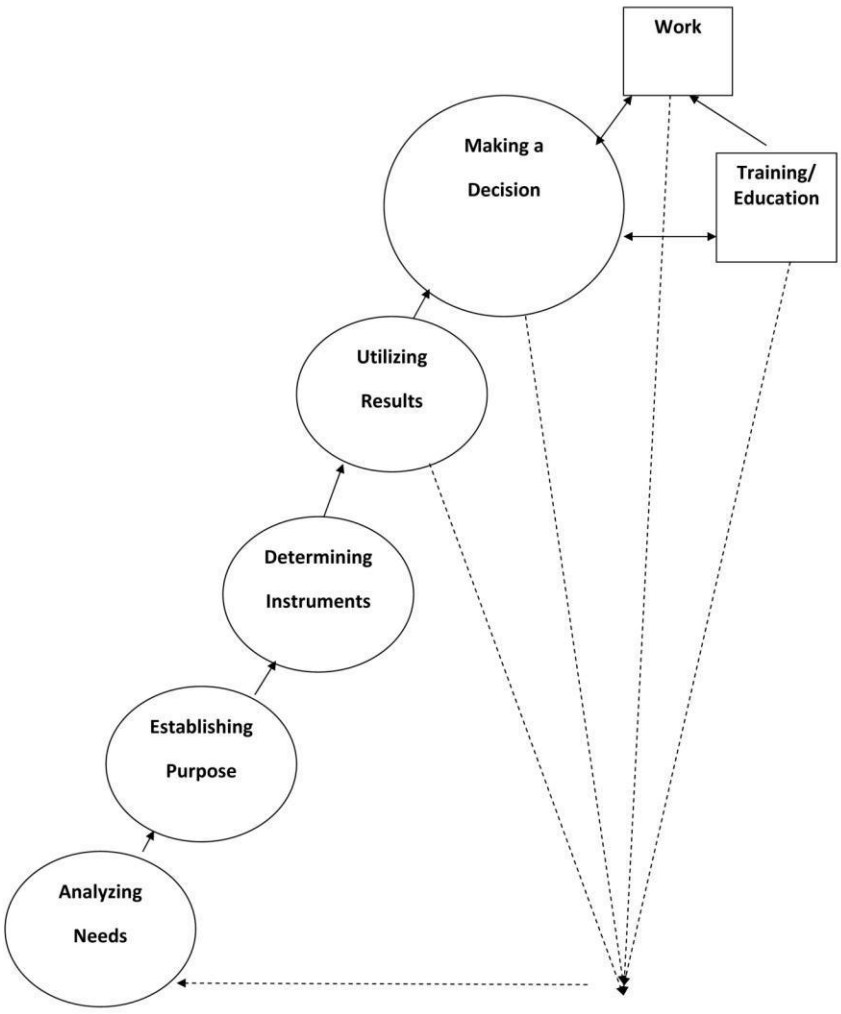
The Importance of Relationship

Repeatedly, research has shown that the key to a client's evaluation of counseling as being effective goes back to the relationship with the practitioner. The client must feel heard by the practitioner, and this sense of being heard comes through the practitioner's use of basic counseling skills, including reflection of feelings, paraphrasing, summarizing, and confrontation. Establishing the relationship also means acknowledging the diversity of both the practitioner and the client. This may include racial, gender, ethnic or cultural differences, but may also include religious viewpoints, geographic differences, sexual orientation, or disability. Practitioners should acknowledge and incorporate the individual attributes of each client throughout all the stages of counseling, including establishing a relationship, understanding core issues and the client's world views, choosing and interpreting inventories and interventions, and in closure. A simple example would be when a person gets her inventory results and a field of study/major is suggested that is not offered at the local university. This student wants to stay close to home because of a strong family value. Instead of encouraging that student to be willing to go anywhere to achieve her goal, and not let her family ties stand in her way, a career counselor should acknowledge the struggle between her career interests and her values. Appropriate self-disclosure can be a way to begin this conversation.

Zunker's Model for Using Career Assessments

Drawing from the works of Cronbach (1984), Anastasi (1988), and Super, Osborne, Walsh, Brown, and Niles (1992), Zunker conceptualized a model for using assessment results in developmental career counseling as having four major steps. As shown in Figure 1-1, these steps are Analyzing Needs, Establishing the Purpose of Testing, Determining the Instruments, and Utilizing the Results. The process is cyclical and continuous. One may return to the first step during career exploration, after a period of being employed, or after completing an educational/training program. For example, an individual who is exploring careers has discussed general interests with a practitioner and, after reviewing occupational requirements, has identified a need for an assessment of abilities. It's possible and often occurs that a client may come in with one need (such as choosing a career) and after getting the results of an inventory and through discussions with the counselor,

Figure 1-1: Zunker's Model for Integrating Assessment Results



realizes that negative career thinking may be getting in the way of that process, or that in addition to exploring interests, looking at values may be useful, and so, cycle back in at different points.

An individual who is dissatisfied with her current career wishes to begin the process anew and to select a different career based on her increased understanding of needs that are not being met. After completing a training program for licensed vocational nurses, another individual has decided that this occupation is not what he wants; he wishes to meet with a practitioner to analyze why he is dissatisfied and to reassess his career decision. Because career development is a continuous process, assessment may prove to be useful at any point in the life span. See Zunker (2014) for more information on the use of assessment results with career counseling models.

Super and colleagues (1992) consider career maturity to be an important index to an individual's readiness for making career decisions. In an assessment model labeled the Career-Development Assessment and

Counseling model (C-DAC), Super and colleagues suggest that measured preferences, such as interest inventory results, should be viewed as basic status data or level of career maturity. Cognitive Information Processing theory (Peterson, Sampson, Reardon, & Lenz, 2002) identify two components of readiness as being the capability of an individual to make a career choice as it interacts with the complexity going on in that individual's life at the time. These are two components that a practitioner should also keep in mind when determining whether an assessment tool is appropriate, and if so, which one and how much support the individual may need in understanding the results and continuing through the career counseling process.

Other measures, such as value inventories and life role importance questionnaires, should be used as moderator variables in the career counseling process. The basic logic underlying this approach is to measure developmental stages according to Super's (1990) scheme and the individual's tasks or concerns to determine the client's needs plus his or her readiness to make career commitments. With this information and additional data gathered through interviews and self-reports, practitioners can determine developmental counseling intervention strategies for each client. Developmental strategies are thus suggested throughout this text.

Step 1: Analyzing Needs

The first step in any counseling encounter is to establish the counseling relationship. As part of the first meeting, the goal is to understand what the client hopes to accomplish as a result of career counseling. To ensure that a practitioner is on an effective course for meeting individual needs, a needs analysis may be accomplished by using interviews, a biographical data form, education and work records, discussions with family or a significant other, or a combination of these methods. The underlying goal is to encourage client participation. Clients who recognize their needs are likely to participate actively and enthusiastically in all phases of preparing for and using assessment results. For example, when Beth recognizes that she needs a structured approach for career exploration, she can be shown how assessment results can assist her.

Likewise, when Raj recognizes the need for help in predicting his chances of success in an educational program, he should be motivated to do his best. Thus, the first key to effective use of assessment results is the practitioner's skill in aiding the client in identifying needs and in relating needs to the purpose of testing.

Four Objectives in Identifying Needs

The following four objectives outlined in Table 1-1 are designed to assist the practitioner in identifying needs: establish the counseling relationship, accept and adopt the client's views, establish lifestyle dimensions, and specify the needs. Accomplishing these objectives may take more time than the initial interview.

KENYA: As you were talking, I saw some things that are similar in our stories. My family is most important to me. I know that I can choose any career that I want, but really, I don't want a career that is going to take me far away from my parents and my sisters and aunts. I would feel lost without them. I see them every day, and we get together on weekends. I really listen to them when they give me advice—especially advice from my grandmother. She's almost always right, and is very wise. Everyone says I should get out on my own, and make my decisions, but that doesn't sound all that exciting to me. I like my life now. I just want to figure out what I can do as a career that will help me provide for my family.

Through this opening discussion and self-disclosure, the practitioner made it safe for Kenya to share some of her values of inter-dependent decision-making. This leads into the second step, accepting and adopting the client's views.

Step 2: Establishing the Purpose of Testing

Following the needs analysis, the practitioner and client decide on the purpose of testing. Both should recognize that testing cannot be expected to meet all identified needs. Testing can be used for diagnosis, prediction, and comparing individuals with criterion groups. The results can be used to stimulate further study of individual characteristics relative to potential career choices. In some instances, the purpose of testing is to answer a specific question, as in predicting chances of success in a training program or an occupation.

In other instances, the purpose of testing may be less specific, as in establishing a direction for career exploration for an individual who is floundering. In cases such as this, where the purpose of testing is less tangible, the practitioner may be tempted to prescribe a battery of tests without obtaining the client's agreement on the purpose of the tests. To avoid this pitfall, the practitioner should establish the policy of explaining the purpose of each measuring instrument selected and making sure that the results of the testing relates to either the overall or specific goal(s).

Table 1-1: Four Objectives in Identifying Needs

Goal	Purpose	Steps to Accomplish	Sample Questions
To establish a counseling relationship	To foster a sense of trust and mutual respect	• Establishing a relationship • Communicate a sincere desire to help the client • Provide hospitality by being friendly • Arrange for personal introductions of staff members • On time for the appointment • Establish a warm, friendly atmosphere • Give undivided attention to the client	• What brings you by today? • What are the client's expectations of career counseling? • Where is the client in the career decision-making process? • Are tests indicated or contraindicated? • Will the client be willing to invest the time necessary for career counseling? • Does the client understand the practitioner versus the client role? • What is the client hoping to achieve by the end of this meeting? • Are these goals realistic, and do they match services available in the setting?
To accept and adopt the client's views	To assist clients in becoming aware of their viewpoints and in recognizing how their viewpoints can affect their career decision making	• Recognize that individuals are unique and have the right to their own commitments, self-awareness, and priorities • Pay attention and explore the role of culture in the client's worldviews	• Does the client have realistic expectations about the world of work? • Has the client experienced discrimination? What impact do those experiences have on his/her current perspective about career choice? • What is the client's level of sophistication in regard to career considerations? • Has the client established short-term and long-term goals? • How committed is the client to his or her viewpoints? • Would value clarification be helpful? • What stereotypes and biases does the practitioner have that may impact his or her counseling approach?
To establish the dimensions of lifestyle	To help clients explore how their career decisions can greatly influence their individual's style of life	• Discuss place of residence, work climate, family responsibilities, use of leisure time, leadership opportunities, financial needs, mobility, and the desire to contribute to society • Encourage clarification of priorities for lifestyle, and through this process realistic alternatives and options can be developed.	• Does the client recognize how career choice will affect lifestyle? • Has the client set lifestyle priorities? • Would an interest, value, or personality inventory help clarify the client's needs? • Would it help to bring in family members or spouses/partners in this discussion? • Are there significant discrepancies between lifestyle dimensions and the needs most likely to be met by the careers under consideration?
To specify needs	To determine if a career assessment will help meet the client's specific need(s).	• As the client states needs, the practitioner summarizes and records the statements for later use in reinforcing the purpose of testing. • Needs analysis	• "Tell me more about your desire to explore interests." • "You mentioned earlier you would like to more about your aptitudes." • "How might this career help you meet your personal goals?" • "What is it about this kind of job that makes it interesting?" • "How would you describe an individual who chooses jobs that help others?" • "Would you like to know more about your interests?" • "How do the needs of your family play a part in this career decision?" • "Would you like to bring in a family member or others as we talk about your needs, your family's needs, and the community's needs?"

The purpose of each test, inventory and intervention should be explained in terms that the client can comprehend. For example, the purpose of an interest inventory may be explained to a high school student as follows:

- "This inventory will help us identify your interests. We can then compare your interests to the interests of groups of individuals in certain jobs."
- "These test scores will give us some idea of your chances of making a C or better at the college you are considering."
- "This achievement test will show us how well you can read, spell, and do arithmetic problems. We can use the scores to help us choose a job or a training program for you." (In this example, the practitioner simplifies the language for a student with language difficulties).

In all instances, to make assessment results meaningful, we should attempt to relate the purpose of testing to the needs the client has identified (Cronbach, 1984). The client should also be made aware of how assessment results are used with other data in the career decision-making process. The following dialogue illustrates how a practitioner can accomplish these objectives.

Example of Establishing the Purpose of Testing

PRACTITIONER: As you will recall, we agreed to record your needs for information, materials, programs, and tests. Let's review our comments on testing possibilities. Do you remember any of the testing needs agreed on?

CLIENT: Yes, I want to take an interest inventory.

PRACTITIONER: Do you remember why?

CLIENT: I am not sure about what I want to do. I believe knowing more about my interests would help in choosing a career.

PRACTITIONER: Do you recall specifically how the results of an interest inventory would help the career decision-making process?

CLIENT: Yes, I believe that I will be able to compare the interests of people in different occupations with my own interests.

PRACTITIONER: Go on.

CLIENT: This will give me information about personal traits that I can use with other things I've learned about myself.

Step 3: Determining the Instruments

If a patient tells a doctor her throat is hurting, it is unlikely that the doctor will prescribe a foot ointment, unless she was also complaining of a foot irritation. If the doctor *did* prescribe foot ointment for a sore throat, the patient might question whether the doctor was listening, whether the doctor was qualified, or whether the doctor knew more than she did about her own needs (i.e., maybe there is something in foot ointment that also cures sore throats). This example may sound extreme, but consider the possibility of the following scenarios:

- Jari wants to research careers related to math, and is given an interest inventory
- Reese, who engages in a great deal of negative self-talk and doesn't believe she is capable of much, is asked to rank order her skills
- Hank wants to find out what occupations would best match his skills, and is given a personality inventory
- Jackson has narrowed his options down to two, and is prescribed a vocational identity inventory

In each of these examples, the assessment doesn't match the client needs. What might be the result? Frustration? Anger? Confusion? In our patient example with the sore throat, it might take the patient longer to recover. In the career examples above, more time will pass before the real need is met—and, the client may not return to career counseling, sensing that the practitioner wasn't listening or wasn't qualified, or worse, that they themselves are the cause for the poor results and that they are a lost cause.

Once the needs have been specified, and the practitioner and client have determined that an assessment is appropriate, the next step is to identify which instrument will be best suited. Hopefully, the instruments that a

practitioner has available are valid, reliable, current and culturally appropriate. So, the basic considerations for deciding upon an instrument include the construct the instrument purports to measure, reliability, validity, availability, culturally appropriate and fair, practitioner competence in administering and interpreting the assessment, and finally, cost. The types of reliability and validity that should be established for a test are determined by the purpose and use of the test. A review of the procedures for determining and comparing different types of reliability and validity may be found in several texts, including Cronbach (1984), Drummond (2009), Groth-Marnat (2009), Kaplan and Saccuzzo (1993), Zunker (2014), and Whiston (2000). We also cover this information in chapter 3.

What Different Tests Measure

In this book, we concentrate on tests of ability and achievement and on inventories that measure career development, interests, personality, and values. While the classification titles of tests provide a fairly clear indication of what they measure, Table 1-2 more clearly specifies the constructs measured by each type of test.

Results from interest, personality, and value inventories promote discussion of the client's relationship to the working world and the satisfaction the client may derive from a career. In the chapters that follow, each of the test categories mentioned here is discussed in detail. In addition to standardized tests, we will also be exploring non-standardized approaches such as card sorts and genograms.

Table 1-2: Sample Instruments for Specific Constructs

Type of Test	**Construct(s) Measured**
Ability Tests	Skills, aptitudes
Achievement Tests	Educational strengths and weaknesses; can be used to select appropriate remedial educational programs and other educational intervention strategies such as skills training
Interest Inventories	Interests, preferences
Values Inventories	Motivations, priorities
Personality Tests	Individual differences in social traits, motivational drives and needs, attitudes and adjustment
Career Decision Inventories	Vocational development in self-awareness, planning skills, decision-making skills, decidedness levels and career beliefs

Step 4: Using the Results

Because individual choice patterns are unique and can be influenced by economic conditions and experiences over the life span, assessment use varies greatly. More than likely, individuals will find that assessment results can assist them at various stages of their lives, particularly in clarifying needs and in developing self-awareness. Contemporary thought places considerable importance on the individual's responsibility for finding satisfaction in the ever-changing world of work. This concept was succinctly stated by Shakespeare in *Julius Caesar*: "The fault, dear Brutus, is not in our stars, but in ourselves, that we are underlings."

The use of assessment results in career counseling should be carefully calculated and systematically accomplished through established operational procedures. In general, assessment results identify individual characteristics and traits, which in turn point to possible avenues for career exploration. In the case of making a career choice, the practitioner and the client discuss potential career fields using assessment results to facilitate the dialogue. Interpreting assessment results is the focus of this book, and thus will be addressed in remaining chapters with practical examples and case studies. In addition, general steps for interpreting results will be discussed in Chapter 2.

Step 5: Make a Decision

Ideally, after completing an inventory and discussing the results, the client will be ready to make a commitment to a career decision, which will lead them to finding a job or getting the necessary training. This is not always the case, though. As part of the discussion of the results, the client and practitioner should re-evaluate whether the purpose for testing was achieved and the career need met. How satisfied is the client with the results? Either way, a decision is the next step, and could be:

- To research occupations that were generated
- To identify majors or programs of study related to career fields of interest
- To take a different assessment to further build self-knowledge
- To address negative thinking that might have impacted the test results

The model includes some bi-directional arrows as well, suggesting that the client and practitioner are regularly examining if the needs have changed, and if so, begin the process again. Also, as a client commits to a decision by either trying out the career choice or beginning training, she or he is likely engaging in a re-evaluation of that decision, and also whether the initial need still exists or if a new need has arisen.

Using the Model for Individual Counseling: A Case Example

The following counseling case illustrates the use of a conceptual model using assessment results in a senior high school counseling center. Each step in the model is illustrated by dialogue between practitioner and client and by occasional notations made by the practitioner. Standardized assessment instruments used in this case were not identified. In later chapters, other counseling cases describing the use of models employing assessment results are described, citing specific standardized assessment instruments. In the following illustration of the conceptual model, both major and minor components of the model are identified to demonstrate a sequential order of events. Notations and dialogue between practitioner and client were created for the purpose of illustration.

Amy, a self-referred 17-year-old Hispanic female high school senior, reported to the counseling center that she was undecided about plans after graduation. She filled out a questionnaire and was introduced to Gretchen, her practitioner.

Step 1: Analyze Needs

A. Establish the Counseling Relationship

PRACTITIONER: Amy, I'm Gretchen, welcome to the Counseling Center. I believe you have met Carla, our secretary, who will help us with appointments and records. Please call either one of us if you need any information as we go `along. My office is the first door to the left, here. Please come in and have a seat.

After a brief discussion of current events, the practitioner explained the order of procedures and assured Amy of client confidentiality. The practitioner shared some of her personal background and invited Amy to do the same. Amy shared that she was a first generation American, and that at times, she felt somewhat torn between "the old ways" and the "new way." Her parents had always stressed the importance of a good education, and not taking for granted the opportunities before her. While they were generally supportive of any career path she might choose, there was an unspoken emphasis on being "successful." The conversation shifted easily to Amy's indecision concerning her plans after high school.

AMY: I'm not even sure I'm ready to go to college. I don't know what I want to be and I can't decide about a major. All my friends have this settled, but not me. I don't want to disappoint my family. They have been saving for my college since I was born. I don't want to waste my time or their money by making a bad choice.

The practitioner assured Amy that the counseling center could help her make these decisions. The practitioner continued to build the relationship by not immediately challenging the family values, but by saying, "You're right. This is an important decision, and you want to make the best choice that you can." Gretchen also informed Amy of their career counseling time commitment of five to six counseling sessions with some additional time for testing, if appropriate. The practitioner also established a counseling goal by asking Amy if she could make a table that compared her ideas about possible majors/careers with those of her parents and family.

B. Accept and Adopt the Client's Views

The practitioner encouraged Amy to discuss her academic background, general interests, leisure and work experiences, and values. Amy informed the practitioner of her previous work experience, which consisted of two months as a swimming instructor and four months as an assistant program director in a home for the elderly. Amy indicated that she liked both jobs.

PRACTITIONER: Could you explain how the experiences of these two jobs might influence your future choice of a career?

AMY: Well, I never thought about it, but I do enjoy working with people. I like to teach, also, but I don't believe I would like to be a schoolteacher.

PRACTITIONER: I would be interested in knowing how you've come to those conclusions.

AMY: I'm not sure I could handle all the discipline problems that teachers have to deal with. Besides, I want to do other things helping people. I really enjoyed the work I did with the elderly.

Amy continued to express interests and aspirations while the practitioner made the following notations:

- Good rapport has been established
- Amy feels free to express herself
- Amy likes working with people
- Has some limited exposure to careers
- Has developed tentative expectations of the future, but needs help in clarifying interests
- Some pressures to make a "wise" choice, and not disappoint others
- Family influence and input highly valued

C. Establish the Dimensions of Lifestyle

PRACTITIONER: Now, let's take a look at the future. In fact, I would like you to project yourself into the future. For example, think about where you would like to live five or ten years from now and what kind of leisure activities such as travel you would like.

AMY: Okay, let me see (pause)… Hmm, someday I would like to be living in an apartment on my own, of course, with my own car right here in the city, I think. I would like to have a nice place, but I really don't want a fancy car, just a fairly new one. I guess one of the most important things to me is having good clothes and being able to eat out in nice restaurants. I also like to travel. I've been overseas on vacation with my parents, and I would like to go back some day. About money … I want enough to be able to do these things.

PRACTITIONER: That's a good start, Amy. We will be discussing lifestyle preferences again. I think we can sort out more specific aspects of your lifestyle choices and how they may influence career decisions in one of our future sessions.

During the course of the counseling session, the practitioner thought that the following assessments might be helpful:

1. Measure of college aptitude—Information for predicting success in selected colleges
2. Measure of interests—General interest patterns are needed to stimulate dialogue about future goals. Specific interests will be used to link college majors with potential careers
3. Measure of lifestyle preferences—Lifestyle measures will introduce another dimension for consideration in the decision-making process
4. Invite Amy's parents in for discussion of their vision for their daughter's career path

The practitioner's overall goal was to provide Amy with relevant information that could be used in the decision-making process

Step 2: Establish a Purpose

PRACTITIONER: Our discussion has been very productive and, before you leave today, let's summarize some of the needs you have expressed. One of the first topics we discussed was your indecision about college. Remember you questioned whether you should attend or not.

AMY: Yes, that's right. Maybe I was just blowing off steam; I know I should probably go to college. Really, it's not an option. I will be going—I just want to know why I'm going.

PRACTITIONER: Would you like to take an aptitude test to see how prepared you are for college?

AMY: Yes … okay… (pause)… I did take one of the required exams for college a few months ago.

PRACTITIONER: Good, we probably have the results in our files and we can use these to help us with our decision. I'll check the files and if we need another test, I'll let you know at our next appointment.

(Amy nodded approval.)

PRACTITIONER: Another need you mentioned is choosing a college major.

AMY: Yes, I don't really know what I want to do. I've had subjects I like, but nothing grabs me.

PRACTITIONER: One of the things we discussed was comparing the options you're considering with options your parents see for you. You can extend that to family members as well. After all, they've seen you develop through the years and have a much more thorough view than I do or any inventory. That being said, we do have several interest inventories that might confirm some of your choices and suggest new ones. Would you like to take one?

When Amy agreed to complete the table, and also that an interest inventory would be fine with her, the practitioner turned her attention to the last of the list of indicated needs—lifestyle preferences.

PRACTITIONER: Today I also asked you to project yourself into the future and you were able to express some of your goals. Do you think it would be helpful to further clarify your lifestyle preferences?

AMY: That's something I really haven't thought about very much. I think it might help, but I'm not sure just how.

PRACTITIONER: Okay, that's a good question. Let me briefly explain that career and lifestyle are closely related. For example, your career choice will determine to some extent the kind of lifestyle you will have in the future. One illustration involves the financial returns you get from a job. Remember, you said you wanted a new car, to have the opportunity to travel to Europe, and to have a nice apartment. In order to be able to have and do these things, you will need a job that provides the necessary resources.

AMY: I see. Well, yes, I probably should talk more about my future.

After the practitioner was certain that Amy understood the purpose of each assessment instrument, an appointment for the next counseling session was set.

Step 3: Determine the Instrument

The practitioner discovered that Amy had taken a nationally administered college aptitude test and the results were on file in the counseling center. Composite scores indicated that Amy was well above the national norm for college-bound students. These test scores were current and could be used to predict chances of making a C or better at several colleges, so the practitioner decided that another aptitude test was unnecessary.

The practitioner chose an interest inventory providing measures of general and specific occupational interests. The goal was to stimulate discussion of general interests and to verify preferences Amy had previously expressed. Moreover, the practitioner's primary objective was to stimulate dialogue that could help Amy clarify her interests. Finally, the practitioner chose a lifestyle measure that would assess Amy's preferences for a variety of lifestyle factors. The practitioner was particularly interested in assessing Amy's preferences for work achievement and leadership, work environment, and leisure orientation. As with the interest inventory, the practitioner's objective was to stimulate discussion to help Amy clarify values and lifestyle preferences.

Step 4: Use the Results

During Amy's next appointment, the interest inventory and lifestyle preference surveys were administered. After they were scored, the results of these inventories and aptitude tests were carefully reviewed by the practitioner during pre-interpretation preparation. The practitioner made notes on several items she felt would stimulate discussion. For example, on the interest inventory, she made a notation that Amy had a very high score on the general occupational theme—social—and on such specific occupations as social worker and school counselor.

Highest scores on the lifestyle preference survey were educational achievement, work achievement, and structured work environment. The practitioner was particularly interested in having Amy link lifestyle preferences to high-interest occupations and general occupational themes. Priorities for lifestyle preferences would be used to introduce another dimension of Amy's values in the decision-making process.

Finally, the practitioner obtained studies of students' expectancies of making a C or better at several community colleges and universities. This information would provide an index to predict Amy's chances of matriculating at several two- and four-year institutions of higher learning.

The practitioner began the utilization-of-results session by explaining the purpose of the college aptitude test Amy had taken. The scores were explained as follows.

PRACTITIONER: Since you have said you want to go to college, we will interpret your scores by using National College Bound Norms. These norms are derived for students who have indicated that they intend to enroll in a college or a university. Your total score places you in the 86th percentile among college-bound students. This means that 86 out of 100 college-bound students who took the test scored lower than you did and 14 out of 100 scored higher than you did.

AMY: Wow! That's better than I thought I would do on that test. Does this mean that I could do okay at City College?

The practitioner was able to answer Amy's question by referring to an expectancy table that had been provided by City College. On the basis of Amy's total test score, the practitioner was able to inform Amy that her chances of making an overall C average during her freshman year at City College were very good. The practitioner was also able to point out the chances of making a C or better in specific courses offered to freshmen at City College. These data not only provided an index for predicting Amy's chances of matriculating in City College, but also could be used for suggesting an academic major.

The practitioner's next step in using assessment results was to outline the organization of scores on the interest profile. She explained the various scales on the test, including general occupational interest scores and scores on specific occupations. The scores were interpreted as follows.

PRACTITIONER: Amy, you scored in the high category on the general occupational theme—social. People who score high on this theme like to work with people, share responsibilities, and enjoy working in groups. Do you feel that this is an accurate representation of your interests?

Using this procedure, the practitioner encouraged Amy to discuss other scores on the general occupational theme part of the profile. Likewise, this procedure was used to enhance the discussion of scores measuring specific occupations. Then the practitioner asked Amy to share the table she had completed. Amy shared that there was a lot of agreement with her own ideas as well as that with her family, and even some friends, about what career options might be best for her. Some of the options included teaching, counseling, nursing, human resource development and hospitality. Amy was encouraged to jot down occupations of interest for further exploration in the career library and on the computerized career information system. A discussion of lifestyle orientation related to interests helped Amy crystallize her projections of future needs and desires.

Step 5: Make a Decision

Amy ultimately decided that she should pursue a college education, and that now was a good time to do so. She decided to attend City College and tentatively major in human resource development, an area that met her interests and values, and also was within the prestige and "success" level expected by her family. Zunker's model proved to be a useful framework for guiding her through the process of career counseling, and made the integration of assessment results rather seamless but also helpful in the discussion.

Using Career Assessments to Stimulate Career Exploration in Groups

Group counseling, classroom "guidance" and workshops allow a practitioner to meet the needs of many clients or students than would be possible with one-on-one appointments. Other benefits of group career counseling include: enhancing career counseling outcomes, increased efficiency and cost-effectiveness, enhanced feedback for group members, personalizing information and for the career practitioners, enjoyment and variety (Pyle, 2007). A meta-analytic study of 50 articles has demonstrated that structured career counseling groups and career workshops are effective as interventions (Whiston, Brecheisen, & Stephens, 2003). Some career assessments can also be administered and interpreted successfully in group situations.

Adapting the Assessment Model to Groups

The model for using assessment results proposed in the previous section can easily be adapted to groups. The same steps apply. However, methods used in applying the model may have to be altered. For example, a needs analysis can be accomplished through group discussion or as part of a screening inventory, with each individual noting his or her own needs. Some will find that testing is not necessary at this point in their career

development. Those who decide that testing is appropriate will move to the next step of establishing the purposes of testing. After testing purposes are identified, different types of tests and inventories can be selected. Small groups may be formed for administering the tests and sharing results. Individuals or entire groups may then go back to the first step, to reestablish needs, at any time in career exploration.

A modification of the model for groups could include the following procedures:

1. Introduce the concepts of career development
2. Explain the use of assessment
3. Introduce the types of measuring instruments
4. Interpret the results
5. Introduce support material

Interest inventories are especially effective in promoting group discussions and are usually less threatening than aptitude or achievement tests. Who wants to broadcast to a group that they are two standard deviations below the mean on their technical skills? However, other types of measuring instruments can also be used effectively to generate activities for groups. The following example illustrates the use of an interest inventory in a classroom setting.

Example of Group Career Exploration

Ms. Alvarez, a high school practitioner, was invited to a high school class that was working through a career education program. She was asked to present the types of measuring instruments available and to explain how the students could use the career resource center. Before the presentation, Ms. Alvarez asked the teacher's permission to introduce the steps in career decision-making and to make some comments on the basic elements of career development. As she presented this material, she emphasized the purpose and use of assessment results.

The students requested that an interest inventory be administered. Afterward, the practitioner explained how to interpret the score profiles. Ms. Alvarez spent considerable time answering individual questions concerning the results. The practitioner emphasized that interests are one of the important considerations in career decision-making.

Following the interpretation of results, the practitioner introduced the next step in the career decision-making process. Some of the students decided to take additional tests and inventories. Others took different courses of action. Several decided to collect information about selected careers in the career resource center, and some members of the group chose to visit work sites.

In this case, interest inventory results stimulated students to generate further activities within the framework of a decision-making model. This example illustrates the importance of clarifying the role of assessment within a career decision-making model. The practitioner emphasized that career decision-making involves a sequence of steps and support materials. By placing assessment in proper perspective, the practitioner was able to enhance the group's usage of assessment results.

General Overview of This Book

Regardless of the theoretical approach of the practitioner, a common activity in which those providing career counseling often engage is that of administering and interpreting the results of an assessment to a client or a student. The purpose of this book is to review a variety of such inventories, provide basic information about the psychometric properties of these tools, and demonstrate how the results of such inventories might be used in practice. This book begins where courses in assessment and appraisal methods usually end. Instead of emphasizing the procedures used for standardizing tests and inventories and the methods used to develop them, this book illustrates the use of assessment results in the career counseling process. The material is presented with the assumption that the reader has a basic foundation in tests and measurements. In each chapter, we review representative examples of tests, inventories, and self-assessment measures and explain how results are used.

Fictitious cases further illustrate the use of many of these instruments. These cases resemble actual counseling encounters that we have had or that practitioners we have supervised have had. The cases do not include descriptions of the entire information-gathering process and all counseling encounters. In each case, we have included only the material relevant for illustrating the use of assessment results. All standardized assessment instruments mentioned in this book are listed in the "List of Publishers' Names and Websites."

The introduction of new measuring instruments and the refinement and revitalization of established tests and inventories provide further information to the career practitioner. In addition, technology and a global economy has created a variety of new occupations, while national and international economic struggles resulting in layoffs and closings require many to re-evaluate and re-package their skills in order to find work, sometimes in a job or occupational field very different from the one they previously had. We will also explore the use of social media tools in relationship to career testing.

The stereotypes of the breadwinner father and the homemaker mother have undergone significant modification. Women will continue to enter the labor force at a rate faster than men, and will comprise 47.5% of the entire workforce in 2016, based on the Bureau of Labor Statistics (http://www.dol.gov/wb/stats/main.htm). The look of the labor force will be older, with workers ages 55 and older projecting to make up ¼ of the labor market (BLS: http://www.bls.gov/news.release/ecopro.nr0.htm) in 2018. While Whites will continue to make up the majority of the labor force in 2018 (79%, BLS), Asians will increase by almost 30% to comprise 5.6% of the labor force, Blacks will increase by 14.1% to comprise 12.1%, and Hispanics (any race) will grow by 33.1% to comprise 17.6% in 2018.

The variety of clients a counselor sees may include a former executive who is a victim of downsizing in an organization, a homemaker and divorcee who is entering the work force for the first time, a high school dropout, an undecided college student, and a graduate who is unable to find an appropriate career path. In addition, with technological advances, a counselor may not "see" a client at all in the traditional sense, but may conduct career counseling over the Internet. Special instruments have also been developed for individuals who are disadvantaged or who have disabling conditions. All these factors have made it necessary for practitioners to reevaluate if, when, and how they can most effectively use assessments within the context of career counseling. We believe that the model described in this chapter provides a useful backdrop for that evaluation.

Chapter 2 will provide a context for interpreting assessment results in general. In Chapter 3, we will review some basic measurement concepts that will aid in the interpretation of the specific inventories and case presentations. Chapter 4 will explore ethical considerations with respect to career assessment. With these foundational chapters as our backdrop, the remaining chapters will review a variety of tests and inventories selected because they are widely used or provide innovative methods of presenting score results or both. They are representative of the tests and inventories available. For a general evaluation of tests, consult the following references: A Counselor's Guide to Career Assessment Instruments, 6th ed. (Wood & Hays, 2013) and The Mental Measurements Yearbook.

Each review in this book follows approximately the same format and provides the following information: purpose of the instrument, description of subtests, description of reliability and validity studies when appropriate, description of profile and score results, and method for interpreting the results. Case studies illustrate how the instruments may be used for career development. The cases demonstrate the use of assessment in career counseling with clients ranging in age from high school youths to middle-aged adults. At the conclusion of each chapter are discussion questions, some of which have assessment result profiles for the reader to explore. Through this, we hope that the reader will gain a stronger understanding and a deeper appreciation for how different assessment results can enhance the career counseling process.

Summary

Assessment results can be effectively used to enhance the development of self-knowledge and occupational knowledge, identify barriers and to enhance career decision-making. Within a career decision-making model, assessment results are used to clarify individual characteristics and to generate further activities. The decision to include an assessment should be a mutually agreed-upon choice that ties into the client's goal(s) for career counseling. A model for using assessment results has the following steps: analyzing needs, establishing the purpose of testing, determining the instruments, and utilizing the results. Clients should be actively involved in all steps of the model, which may be used for individual or group counseling.

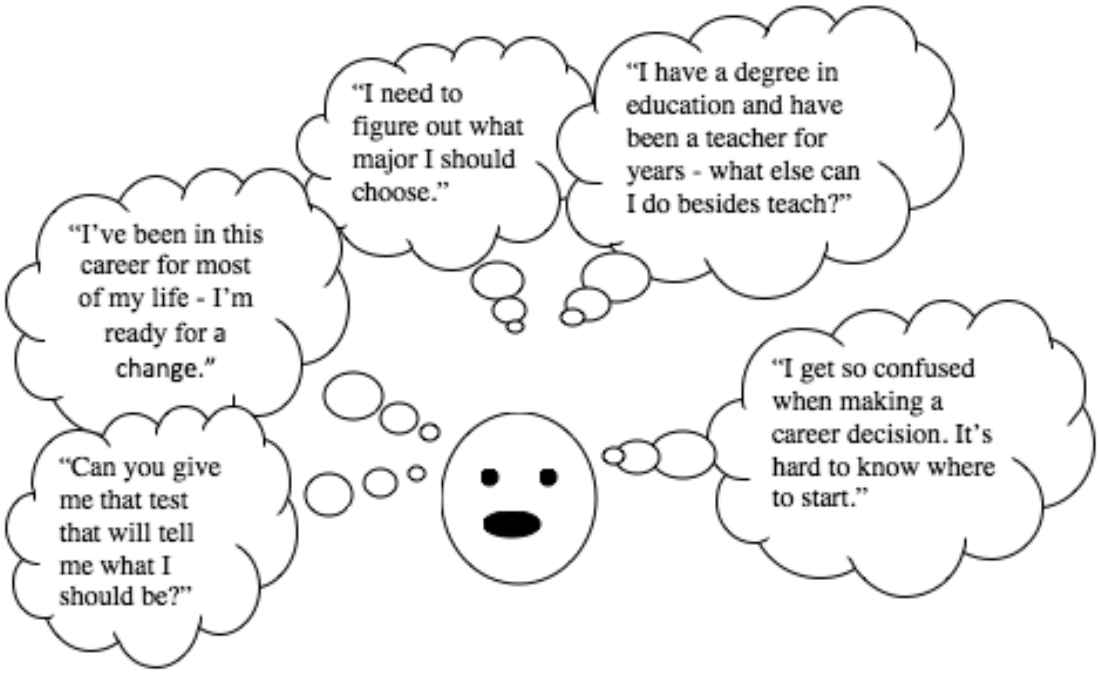
Questions and Exercises

1. What evidence can you give for the rationale that assessment results are used to enhance self-awareness? Using an example, illustrate how the model for using assessment results described in this chapter is cyclical.
2. Why is the model of using assessment results only one part of the career decision-making process?
3. Why might it be necessary to retest an individual after two or three years?
4. How are assessment results used in the total-person approach to career decision-making?
5. Describe how and when you would incorporate the assessment model into the career counseling theory you follow and your career counseling approach.
6. How would you address issues of diversity into a model of career assessment and career testing?
7. How do you believe traditional test results might complement information gained from open-ended questioning and active listening (or vice versa)?
8. What might be some reasons for deciding that an assessment is not appropriate for a client?
9. What assessments have you taken? How useful were they? What information did you learn about yourself? How were the results presented to you? Putting yourself in the counselor's role, what might you have done differently?

CHAPTER 2

INTERPRETING ASSESSMENT RESULTS

How many times have you made or heard statements like these?



These statements are representative of what many career practitioners hear from students and clients who need or want some clarity on their career goals, and see taking a career assessment as a means of achieving that clarity. Often, these statements are among the first that clients say when asked about their reasons for seeking career counseling. Career testing is often an integral part of career counseling, whether the purpose is to identify interests and prioritize careers, discover negative thinking that might be hindering the career decision-making process, or to help clients brainstorm other career options. In order to help individuals evaluate and make decisions about their careers, some type of assessment, whether formal or informal, standardized or non-standardized, may be merited. The goal of this chapter is to better understand the use of assessments within the career counseling process.

Individuals evaluate their choices internally by considering values, interests, achievements, and experiences and externally by seeking acceptance and approval within the work environment. Individuals must deal with self-doubts concerning the appropriateness of their choices in the process, making a careful examination of cognitive and affective domains. The significance of choosing a career parallels other major choices in an individual's life; assessment results can provide useful information in the career decision-making process.

Advanced Organizer

In this chapter, we will cover:

- A Trait-Factor Approach to Assessment Interpretation
- Connecting Career Assessments and Career Development Theories
- Four Uses of Assessment
- How, When and Whether to Use Career Assessment Results
- Culturally Appropriate Career Assessment
- General Steps to Interpreting Results
- Using Holland Codes for Interpretation
- International Career Testing
- One-Shot Career Counseling
- Career Counseling and Testing: Science, Education or Art?
- Summary
- Questions and Exercises

A Trait-Factor Approach to Assessment Interpretation

Various approaches to assessment interpretation have been reported in the literature since Parsons' (1909) seminal work. The trait-and-factor approach advocated by Parsons and later by Williamson (1939, 1949), and reviewed by Prediger (1995) was straightforward—it matched individual abilities and aptitudes with the requirements of a job. Parsons originally defined these requirements as "conditions of success." Do the person's abilities and aptitudes line up with what it takes to be successful in this particular job? This approach has been drastically modified over the years toward considering, for example, many different individual characteristics and traits. In other words, individuals are being encouraged to consider many aspects of themselves in the career decision-making process, including their abilities, interests, personalities, values, needs, hobbies, past work and leisure experiences, and total lifestyles. In fact, more emphasis is being placed on integrating all life roles in the career counseling process. Specifically, individuals are encouraged to evaluate the effect work roles will have on other roles such as family, civic, and leisure roles. In addition, while individuals often come to career counseling to make a specific choice at a given point in time, it is advisable to encourage clients to think of their skills as vibrant, changing over time, even after the immediate decision has been made.

This broad approach that originated with Frank Parsons and others has today been accompanied by computer scoring, online administration of valid (and not-so-valid nor reliable) tests, new assessment instruments, and economic/societal changes, all of which have complicated the issues of measurement and certainly the interpretation and use of assessment results. Computerized reports provide an almost unlimited amount of assessment information, and mirror the matching that Parsons attempted on a much larger scale, made possible through large occupational databases such as O*NET (http://www.onetonline.org). Counselors should be aware that interpretive statements in many computerized reports have likely not gone through the validation process that inventory itself has.

Connecting Career Assessments and Career Development Theories

Assessment results are counseling tools for fostering career exploration and serving as a springboard for deeper discussion. All career theories, systems, and strategies underscore the inclusive and complex nature of the career choice process. The use of assessments should fit within the practitioner's career theory. For example, see Table 2-1 for a sample of how assessments might fit in with different career theories.

Table 2-1 Testing Related to Career Theories

Theory	Theoretical Aspects/Types of Testing
Brown's Values-Based, Holistic Model of Career and Life-Role Choices and Satisfaction	Values
Career Constructivism	Values, beliefs, lifeline, autobiography, card sorts
Chaos Theory	Career thinking
Circumscription and Compromise	Occupational aspirations, self-concept, intelligence, barriers (perceived and real), values
Cognitive Information Processing	Knowledge Domain: Interest, values, skills Decision Making Domain: Decision making abilities Executive Domain: Negative career thoughts, vocational identity, career beliefs, self-esteem, readiness
Holland RIASEC	Interests, abilities, vocational identity
Learning Theory of Career Counselling (Krumboltz)	Beliefs
Parsons' Trait/Factor	Aptitude
Person-Environment Correspondence	Skills, needs/values
Super's Life-Span, Life-Space Approach to Careers	Career maturity, self-concept, abilities/traits, readiness, needs, values, intelligence

Other examples might include aptitude testing for Parsons' approach, values/needs and work environment testing for Person-Environment Correspondence theory, values inventories and card sorts for Brown's Value-Based Holistic model, and interest inventories for Holland's RIASEC theory. Even the more person-centered, narrative or developmental approaches include an opportunity for assessment—whether using standardized tests or directive questioning. For example, Super's concept of career maturity might be tested with the Career

Maturity Inventory, and other portions of his archway model might be tested with various values, interests, and skills inventories. Or, a practitioner might simply show the archway model and ask about each of the constructs such as needs, economic factors or personality.

As a practitioner, the decision to use an inventory shouldn't be random, or because you're not sure what else to do. There should be a reason for testing, and that reason should stem from the career theory of the practitioner and the client needs. For example, if a person wants to know about the likelihood of being successful in engineering, an interest inventory is not the appropriate choice, while an aptitude test would be. Or, if a client is wanting to narrow down between two options, it may be possible that a values prioritization inventory or card sort is appropriate, or it may be that no inventory is necessary, and the counselor can help the client generate a pro/con list for the two options.

Four Uses of Assessment

Two of Williamson's steps in the career counseling process included diagnoses and prognosis. Similarly, assessments can be classified as either a diagnostic or a predictive tool, and can also provide a means of comparing an individual to criterion groups, and, most important, as relevant information for fostering career development over the life span.

Diagnostic Uses of Assessment

A diagnostic test is one that defines or labels a construct. While labeling may have a bad reputation in some circles, it does serve a helpful purpose, in that it helps the practitioner know more about what the client is experiencing. For example, knowing whether a client is undecided-developmental, undecided-multi-potential, or undecided-deferred, versus indecisive-acute or indecisive-chronic, or even decided-confirmation, decided-implementation, or decided-conflict avoidance (Peterson, Sampson, Reardon, & Lenz, 2002) should have an impact on the interventions that are chosen. A similar example would be a person's Holland Code. If you know a person is Artistic, you might choose more creative interventions versus having them complete an occupational comparison table. While achievement and aptitude tests are most often seen as diagnostic tools, interest, value, personality, and career inventories can also be used diagnostically. Typically, these measures are used to raise an individual's level of self-awareness and to indicate to practitioners when clients are lacking in self-awareness or have personal views that are inconsistent with assessment results.

Achievement and aptitude assessment results, in particular, are often used to evaluate individual strengths and weaknesses in order to determine preparedness and potential for training and for beginning work. The identification of skills and aptitudes may broaden the client's options for careers and education. In the same sense, the assessment of academic and skill deficiencies may help identify the need for treatment, remedial training, or skill development.

Example

Jake, a high school senior, was among a group of students participating in career exploration with his high school counselor. During the initial interview, Jake told the counselor that he wanted to go to college but that he had many interests and was not sure which one to pursue. Also, he expressed concern about his ability to succeed academically in college. After further discussion, they agreed that he would complete an aptitude battery. The assessment results identified several academic strengths and a few specific deficiencies. Next, they spent several sessions relating Jake's strengths to career fields and college majors that might be explored. Finally, they reviewed the curricula of nearby colleges and decided, in light of Jake's academic deficiencies, which remedial courses he might take during his freshman year. By the end of counseling, Jake, though still undecided, had narrowed his ideas about a career choice. Moreover, he indicated that he felt positive about his initial academic plan. In this case, having a clear picture of both Jake's abilities and weaknesses allowed the counselor and Jake to create a plan that would help him increase the likelihood of achieving his goals.

Predictive Uses of Assessment

Assessment results may also be used to predict future academic and job performance. The probability of performing well on a job, in a training program, or in an educational program is relevant information on which to base further exploration. However, currently available ability measures primarily provide broad measures of an individual's experience and ability at the time of testing (aptitude tests), whereas achievement tests assess present levels of developed abilities. What is vitally needed is a measure of the occupational significance of abilities—that is, how important it is to have certain abilities to perform successfully in specific occupations. Until we have more data about prediction of occupational success and prediction of training and occupational performance, we should limit these references to more general terms in the counseling dialogue. Given that there is always some amount of error in any test, we will want a client to consider many forms of data when making a career decision, instead of relying solely on any test result.

Two Examples

Case 1. Herb wanted to know whether he could qualify for a machine operator's job in a local industrial plant. Fortunately, Herb's career practitioner had worked closely with the personnel division at the plant and had assisted in gathering data for selection and placement. Based on this information, the career practitioner administered the test that had been used to develop cutoff scores for a variety of jobs in the plant. Herb's score was sufficiently high for him to qualify for a machine operator's job. In this case, Herb was provided with information that helped him evaluate his chances of meeting the requirements of a specific job.

Case 2. Noelle decided that she would like to attend the local community college. However, she was concerned about her chances of being a successful student in that college. Her practitioner had developed an expectancy table (see Chapter 3) based on test scores and grades earned at the college by students who had attended the high school from which Noelle was graduating. Noelle agreed to take the test used in the study, and the practitioner was able to assess her chances of getting a C or better at the college. The prediction of success based on local data was vitally important in Noelle's career exploration.

When assessment results are used to predict subsequent performance, the practitioner should ensure that relevant predictive validity has been established for the tests that are used. For example, a test used to predict job performance should have a previously established high correlation with performance criteria for that job. Likewise, tests for predicting academic performance should be used only when relevant expectancy tables have already been established.

Comparative Uses of Assessment

Comparing one's personal characteristics (abilities, interests, values) with those of a criterion group is a stimulating part of career exploration. For example, it can be enlightening for individuals to compare their interests with the interests of individuals in certain occupational groups. The similarities and differences found can encourage discussion of the relevance of interests in career exploration.

The Strong Interest Inventory provides an example of an interpretive report that compares an individual's interests with those of people in a wide range of occupations. Although an individual may be pleased to find that her interests are similar to those of social science teachers, she should also be encouraged to pay attention to interests that are similar to those of other occupational groups. In addition, knowing that people with her interest code tend to experience satisfaction in certain types of jobs as opposed to others will be very helpful to her in the career exploration process.

Some inventories also show a client's scores as compared to gender-specific scores. This information can also be very helpful. If a client is considering going into a non-traditional career (i.e., when the majority of workers in that field are different gender from the client), exploring strategies on how to break into and be successful in that field will be a helpful discussion to have.

Another comparison that might be made could be intra-personal. That is, a client may take the same inventory more than once to evaluate changes. This is especially relevant for constructs such as dysfunctional career thinking, career decidedness, career maturity, or career satisfaction. A client might want to compare how s/he has progressed over several sessions, and thus a re-take would be warranted.

Developmental Uses of Assessment

Career development as a continuous process is enhanced by relevant assessment results used to increase awareness of career exploration opportunities over the life span. Learning to link measured aptitudes, interests, and values to work requirements and lifestyle preferences are good examples of using assessment results to foster career development. Meaningful assessment during all phases of career development involves the diagnostic, predictive, and comparative use of assessment results.

The American School Counselor Association has outlined three main career goals for students. Table 2-2 shows possible career development activities at elementary, middle and high school levels for each of the goals.

Table 2-2 ASCA Career Goals for Students

	Career Goal A Students will acquire the skills to investigate the world of work in relation to knowledge of self and to make informed career decisions.	Career Goal B Students will employ strategies to achieve future career goals with success and satisfaction.	Career Goal C Students will understand the relationship between personal qualities, education, training and the world of work.
Elementary	Encouraged to develop hobbies.	Work on teams to accomplish a task.	Create a collage of hobbies or have them construct career ladders related to O*NET career groups.
Middle	Create a concept wheel with self at the center, and interests, skills and hobbies generating outward, followed by possible career paths.	Have students create an informational interview form and use with five working adults. Compare the information collected in class.	Research occupations related to courses at websites such as Career Information for Kids, available at bls.gov/k12/index.htm.
High School	Take interest inventories, identify career options.	Assign student pairs three different occupations and require them to create a specific career plan for each. In the large group, write out the strategies and compare for similarities. Finally, have them create their own career plan.	Create a diagram that links personal attributes with career fields and possible training paths.

The college student is challenged with assessing personal aptitudes and preferences when determining a major or a career. The career development objective for an adult in career transition requires an evaluation of learned skills from previous work and leisure experiences in determining new career directions. For the older adult, measured interests and leisure activities, skills needed in part-time or volunteer work, and assessment of established values are relevant developmental uses of assessment results. In all the examples of career development objectives, assessment results provide vital information for enhancing individual growth. The career practitioner needs to be aware of a wide range of assessment instruments to meet individual needs at various stages of career development.

In addition to these guidelines are the National Career Development Guidelines, which are suggested for student and adult career development competencies, currently maintained by the National Career Development Association. Three main areas of emphasis and related goals are outlined in Table 2-3.

Table 2-3 Career Goals Associated with the National Career Development Guidelines

National Career Development Guidelines	Goals
Personal Social Development	• Develop understanding of yourself to build and maintain a positive self-concept • Develop positive interpersonal skills including respect for diversity • Integrate personal growth and change into your career development • Balance personal, leisure, community, learner, family and work roles
Educational Achievement and Lifelong Learning	• Attain educational and achievement and performance levels needed to reach your personal and career goals • Participate in ongoing, lifelong learning experiences to enhance your ability to function effectively in a diverse and changing economy
Career Management	• Create and manage a career plan that meets your goals • Use a process of decision-making as one component of career development • Use accurate, current, and unbiased career information during career planning and management • Master academic, occupational, and general employability skills in order to obtain, create, maintain, and/or advance your employment • Integrate changing employment trends, societal needs, and economic conditions into your career plans

Knowledge of these developmental guidelines will give a practitioner confidence in administering and interpreting career assessments. Knowledge about what individuals should know and be able to do with respect to their career choices informs the career practitioner about appropriate interventions, including career assessments.

How, When and Whether to Use Assessment Results

How, when, and whether to use assessment results are decisions made preferably in collaboration between the practitioner and the client. The decision should be based on the purpose or desired outcome for using instruments. Prior to selecting a specific assessment, the counselor should ask, "Can the results from this assessment provide the information sought, and is that information relevant for the decisions that the client needs to make?" This principle is followed when using assessment results for individuals as well as for groups. Tests are not to be given indiscriminately, and the same tests are not to be given routinely to everyone. Individuals in different phases of career development have different needs, which must be considered when determining whether to use an assessment. One individual may need assistance in developing an awareness of her interests; another may need to clarify his values so s/he can establish priorities. Personality conflicts may be a deterrent for another individual who is considering a job change. Yet another may need assistance in clarifying expectations about work in general.

A careful analysis of the purpose for using measurement devices would answer these questions:

- Is now the best time to introduce a career assessment?
- What information would be useful in helping the client move forward in her/his choice?
- What are testing options are available, and which is most likely to provide the needed information?
- What are the psychometric properties (e.g., reliability, validity, normative sample) for the tests I am considering?
- Are there any mental health concerns or cognitive issues that might impact the client's ability to make the best use of a given inventory? (For example, someone who is depressed may indicate that they have no interest in any activity, and someone who has severe dyslexia might find a longer career inventory frustrating or need an accommodation).
- If a group is being counseled, will the results from the inventory introduce pertinent information for group discussion?

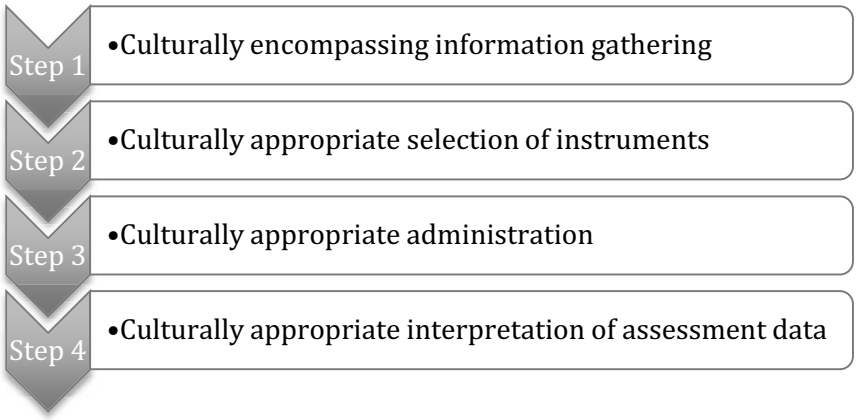
Because career exploration follows paths determined by individual needs, the use of assessment results in career counseling will vary and should be geared toward meeting specific objectives. Later chapters show how

the use of assessment results in counseling can be designed to meet individual objectives.

Culturally Appropriate Career Assessment

Career practitioners should always consider the cultural background of a client when engaging in career counseling and career testing. Flores, Spanierman and Obasi (2003) identified a four stage linear model for culturally appropriate career assessment (see Figure 2-1). They also encouraged a multilevel and multi-method approach to career assessments with diverse clients.

Figure 2-1 A Model for Culturally Appropriate Career Assessment



Multilevel includes not only information at the individual level, but also at the cultural and societal levels. Multi-method suggests using various approaches to assessment. In addition, Leong and Hartung (2000) encouraged practitioners to consider cultural validity (how valid an instrument is for specific cultures) and cultural specificity (how cultural variables such as language and world view impact the assessment process) when selecting a career assessment.

As with culturally appropriate career counseling, *culturally appropriate* career assessment should be synonymous with career assessment. That is, career assessment (and career counseling, for that matter) that is culturally enriched is beneficial for all clients. To self-assess cultural competency, a practitioner might complete Ward and Bingham's (1993) Multicultural Career Counseling Checklist, which includes a section on exploration and assessment. Some examples include understanding the client's view of the ethno-cultural identification of her/his family, as well as any limitations that the client may be associating with her/his race or culture.

Culturally competent practitioners strategically consider whether an inventory is appropriate for diverse clients. Some questions to consider include:

- Does the technical manual provide normative information on diverse groups?
- Does the assessment under consideration match the client's concern?
- Does the inventory show cross-cultural reliability? For which groups?
- Have there been articles published on the use of the inventory with diverse groups and what do those results suggest?
- Do any of the items seem to elicit a repeated response among diverse clients? (Best assessed by using local normative data)

The process of deciding is indeed complex and unique for each individual, dependent on cognitive factors and the social structure of the individual's milieu. Understanding a client's racial and cultural experiences, as well as expectations from significant others and family, will help the career practitioner better understand the contextual issues impacting a career decision, as well as draw upon strengths within that client's environment to help the client achieve their goals.

General Steps To Interpreting Results

Most inventories will provide suggestions on how to interpret the test results to a client. Many manuals will also include case studies that a counselor can review to see how to interpret common as well as unusual test results. The steps below are general steps that can be applied to interpreting any test results. There is an assumption that the counselor is following ethical guidelines, such as taking the test in question, having the results interpreted, and observing an interpretation prior to administering and interpreting the test to a client. In addition, the counselor should consider the developmental level of the client (Whiston & Rose, 2013), to make sure that terminology is appropriate. Interpreting results to a middle school student may differ drastically from interpreting results to an adult. Once these have occurred, the following steps are recommended:

a. **Review results privately.** If at all possible, the practitioner should review the results prior to interpreting them to the client. This way, the practitioner can determine if the scores are valid, if there are any unusual or difficult results (such as no differentiation among scores, or very few career options listed), and decide how to best approach this with the client. It is not always possible for the practitioner to have preview time. For example, a client might come to a session with test results in hand, or the client might complete a brief inventory during a session. The practitioner should not feel "put on the spot" to interpret the results immediately, and can ask for a few minutes to look over the results, or recommend discussing the results the following week after the practitioner has had adequate time to review the results. This allows time for the practitioner to research the psychometric properties of the inventory, research studies conducted with the inventory, determine potential follow up questions, and to receive feedback from a supervisor on the results, if necessary.

b. **Review the purpose of the inventory.** Even if you followed Zunker's model, selected an inventory that matched the client's needs, and discussed the purpose of that specific inventory and what it would and would not provide, you will find that once the results are in hand, the client will say, "the test told me I should…". Begin the interpretation with restating the client's needs, the reason this inventory was select, and the type of results expected (e.g., generating a list of options to consider versus identifying the one best career choice for you, or identifying potential barriers that are getting in the way of a career decision).

c. **Ask for general reactions to the inventory.** Before diving into the results, gain an understanding of the client's perception of the inventory, and listen for any statements that might give clues as to how they approached the test. For example, "I'm not a negative person, so I said that I basically liked everything." Likely outcome: high undifferentiated profile and not very useful results. Or, "That test was really long. In the end I just wanted to get through it." Interpretation: fatigue and irritation might have impacted level of seriousness in responding to items, especially at the end.

d. **Provide a quick view of the report.** Show how the report is organized. In most cases, reports will provide an overview of the constructs being measured, indicators of how a person scored on specific scales, a list of corresponding occupations, and information on additional resources. Think of this step as being similar to picking up a map at a theme park before beginning down any specific route. This allows the client to have an overall sense of the "lay of the land."

e. **Review main constructs.** While many clients may want to jump to the end of the report to see a list of occupations, providing a quick overview is a good idea. For example, the 16PF measures 16 factors of personality, and also five global factors. If a report has a description of the different constructs, and the client has peaks and valleys (clear indicators of preferences and dislikes), the career practitioner might have the client read through the descriptions of the clear constructs and highlight or star the attributes with which the client most identifies. This step can be useful in later discussions, as the practitioner can pull in those specific attributes, such as "Now that we're talking about job searching, remember how you highlighted 'shy and quiet' in that report? How do you think those characteristics might play out at the upcoming career fair?" In addition, by having clients identify which descriptors do and do not fit their personality, it creates a more individualized report.

   If a client has an undifferentiated pattern, the career practitioner may try to gain an understanding of where the client's true scores lie by having the client read through all the main constructs and rank order them, as well as highlight and cross out descriptors that match/don't match his or her perception of self. After ranking, the practitioner should ask if there is a clear break between any of the ranked order. For example, is #1 "light years" away from #2, or are they interchangeable? Are the first five in the same realm of "fit," and then #6 through #8 in the second tier? By adding this step, the practitioner can get a better sense of where the differentiation might occur.

f. **Review scores.** Begin by comparing scores with those reported for the norm group, and if major differences occur, discuss why this might have happened. A score of 52 on the Investigative general occupational theme of the Strong Interest Inventory isn't helpful unless the client knows how to interpret that score. On the Strong Interest Inventory, that score would be considered average, but on the Self-Directed Search that score would be considered very high. The practitioner should review the score ranges, and what high, average and low scores are and mean. The meaning may differ for each inventory. For example, a score of 70 on the Career Thoughts Inventory suggests a high level of dysfunctional career thinking, but a score of 10 does not indicate that the client has a high level of positive career thinking—only the absence of negative career thinking. In that case, there is one construct being measured. Personality inventory results usually reflect scores on a continuum between two different constructs, such as Extroversion and Introversion. High scores on one indicate lower scores on the other.

g. **Ask client to summarize results and scores.** Before moving into the list of occupations (if there is

one), ask the client to summarize what has been reviewed, and their thoughts about how accurate the results are to this point. If they completely disagree with the results presented, the practitioner should not immediately question the validity and reliability of the inventory. Remember, you chose an inventory that was valid and reliable. If the results don't match the client's perceptions of her or his interests, values, personalities, and so forth, the practitioner should reflect on how the client said they approached taking the inventory, and if that had any impact on the results. The client endorsed items on the inventory that yielded the results. If the client was honest in his or her endorsements (rather than trying to make the results come out a certain way), then even though the client may be unhappy with what the results suggest, it does not invalidate the results. The practitioner should use discretion when discussing this with a client. A gentle confrontation or a "let's withhold judgment at this point" statement might be the best approach.

At this point, a practitioner may decide to go back and review individual items with the client. This is especially true for career development, career decision, and career beliefs inventories, or if significant time has passed since the client took the inventory. Look at items endorsed as "strongly agree" or those rated the highest and ask the client to talk about each of those items. Or, similarly to having them review themes, have the client rank order the strongly endorsed items so that a clearer picture of concerns can begin to emerge.

h. **Review the list of occupations.** For those inventories that provide a list of matched occupations or fields of study, it's best to have a highlighter and pen in hand for this next step. Give the report to the client and ask them to look over the list, highlighting options that are potential choices, crossing through options that are not, and placing a question mark by options that the client may need more information on before placing it on the would/would not choose list. This step can be done outside or during the session. If during the session, the practitioner might ask the client to talk aloud during the process to gain a sense of how the client is making decisions about each of the options. Some questions to consider include:
   - Is there a theme emerging (even beyond what the report descriptions suggest) for occupations placed in either category?
   - Is negative self-talk beginning to emerge?
   - How is the client approaching the task?
   - Is the client disappointed that a particular option did not appear on his or her list? (If so, the practitioner can research what the code is for that option and discuss why it might not have appeared.)

i. **Determine next steps.** What happens next is covered extensively in step five of Zunker's model. The practitioner should review the purpose that was determined earlier for taking the inventory, and then determine with the client whether that purpose was achieved. If it was, then what is the next logical step? It might be an assessment that focuses on a different area (e.g., if the first inventory assessed interests and the client also wanted to explore values), or might proceed with gaining information about options of interest. If the goal for testing was not accomplished, the practitioner and client should discuss the possible reasons for this. Possible problems might be inventory selection, a misunderstanding of what the assessment was supposed to do, that the client's stated goals for assessment changed, or that perhaps the client was not ready to take the inventory. Either way, the client and practitioner should re-group to determine what the next step might be, which could be to re-take the inventory, use a different career assessment tool, or focus on a different aspect of career counseling such as exploring career information or a narrative approach.

Emphasis on Dialogue

When interpreting results, the practitioner should aim for balance in the discussion with respect to how much time each person (practitioner and client) talks. If a 20 page report is generated, the temptation is to move into "expert" mode and explain the results for 10, 15, 30 minutes or more. The opposite of this is to be very passive, handing the client the results and letting them read through it, and then to ask "What do you think?" or some other general question. Either direction is less than desirable.

As much as possible, involve the client in discovering and discussing the results. For example, most personality and interests test results have at least one paragraph describing the personality or interest types measured by the inventory. Instead of reading this section of the results or describing the types, a practitioner could say, "Here we have a description of the different types. Why don't you read through them and talk about which one(s) you think is/are most like you?"

At this stage in the interpretation is where career counseling gets the reputation as a "test and tell" activity. As career practitioners, we love problem-solving, and can be easily tempted into giving advice—whether it's about finding career information, job search strategies, or how to interpret a career inventory. Instead, the practitioner should be deliberate about breaking the report into sections, and making sure the client has time to

reflect and respond. It will make the interpretation slower, but it will also be much more meaningful if the client is given the space to consider what the results mean personally.

Using Holland Codes for Interpretation

The Holland codes are a common way for presenting information about an individual's interests and personalities. Several inventories, including the Strong Interest Inventory, the Self-Directed Search, the ASVAB, Career Key, the RIASEC Inventory, the Picture Interest Career Survey, and others utilize the Holland types. Having a basic understanding of the six types and the undergirding theory will help the practitioner understand the meanings of the types and implications for clients.

According to John Holland (1997), individuals are attracted to a given career by their particular personalities and numerous variables that constitute their backgrounds. Although Holland's work centered on the development of interest inventories and their interpretation, his concepts are also related to skills, abilities, attitudes, and values that will be discussed in many of the following chapters. It is therefore important to introduce the basic assumptions of his theory (Holland, Powell & Fritzsche, 1994, pp. 5–6):

1. In our culture, most persons can be categorized as one of six types: Realistic, Investigative, Artistic, Social, Enterprising, or Conventional.
2. There are six kinds of environments: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional.
3. People search for environments that will let them exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles.
4. A person's behavior is determined by an interaction between his or her personality and the characteristics of the environment.

Central to Holland's theory is the concept that one chooses a career to satisfy one's preferred personal modal orientation. For example, a socially oriented individual prefers to work in an environment that provides interaction with others, such as a teaching position. A mechanically inclined individual, however, might seek out an environment where the trade could be quietly practiced and one could avoid socializing to a great extent. Occupational homogeneity—that is, congruence between one's work and interests—provides the best route to self-fulfillment and a consistent career pattern. Individuals out of their element who have conflicting occupational environmental roles and goals will have inconsistent and divergent career patterns. A brief explanation of Holland's personal styles and occupational environments is seen in Table 2-4. For a more complete explanation, see Zunker (2014).

Many of the chapters in this book refer to Holland's types and codes, and, at times, some of this information will be repeated for a better understanding of his typology. For in-depth coverage of RIASEC theory, read Holland's book about his theory (1997) and the many research articles that support his occupational types.

Table 2-4 Holland Personal Styles

Type	Personal Style	Occupational Environments
Realistic (R)	R types prefer concrete versus abstract work tasks, work outdoors in manual activities, likes to work alone or with other realistic people	Most occupations are blue-collar ones, such as plumber, electrician, and service occupations
Investigative (I)	I types prefer to work in an environment where one is required to use abstract and analytical skills, are somewhat independent, and are strongly oriented to accomplishing tasks	Many scientific professions require high levels of education and are intellectually oriented, such as chemist, biologist, and researcher; examples of other investigative occupations are laboratory technician, computer programmer, and electronics worker
Artistic (A)	A types include imaginative and creative individuals who value aesthetics, prefer self-expression through the arts, and are rather independent and extroverted	Some occupations included in this category are sculptor, artist, designer, music teacher, orchestra leader, editor, writer, and critic
Social (S)	S types are very concerned with social problems, prefer social interaction, are religious, participate in community service, are interested in educational activities, and prefer working with people. There is a strong orientation toward working with others and using interpersonal skills	Occupational categories in this group include those in education, such as teacher, school administrator, and college professor; others are social worker, rehabilitation practitioner, and professional nurse
Enterprising (E)	E types are extroverted, aggressive, adventurous, dominant, and persuasive and prefer leadership roles. Their behaviour is also characterized as goal-directed, and they like to coordinate others' work	Occupational categories are managerial including workers in charge of production and in various sales positions
Conventional (C)	C types are practical, well controlled, sociable, and rather conservative. They prefer structured tasks and are comfortable when working with details	Occupations include office and clerical workers, accountant, bookkeeper, receptionist, teller, and key-punch operator

International Career Testing

While many of the popular career inventories in the United States have been translated into languages other than English, there is a dearth of research reporting the reliability, validity, and normative findings for use of these instruments in other countries. Volume 50 of the Career Development Quarterly is a special issue about career counseling in Asia. Some of the articles addressed the issue of career testing. For example, Leung (2002) identified four factors impacting career testing in Hong Kong:

1. The lack of an official Chinese translation of popular U.S. inventories;
2. The inventories are too expensive;
3. Lack of research proving the reliability and validity of the inventories for the different communities within Hong Kong; and
4. The occupations and structure of occupations that are presented either as part of the inventories or as a result of taking such inventories doesn't match the occupations and occupational structure of Hong Kong.

These issues have an obvious impact on career service providers in Hong Kong. There is a need for career instruments that are relevant in terms of specific inventory items as well as a list of occupations that are available and likely possibilities for people in China.

In Taiwan, Chang (2002) described that for centuries, test results were used to classify people into occupations, and people would follow the career path that was suggested by these results. This highlights a difference in philosophy between Taiwan and most American counselors. A key assumption about career testing in general is that the purpose is to expand, not narrow, a person's career options. Practitioners may find it difficult to change a mindset that has been the reality for decades. This relates back to validity and reliability information. Knowing that a Taiwanese client probably puts a great deal of faith into test results, a counselor must ensure that the test being used meets the highest psychometric standards, and that the client understands the purpose of the test. Chang also described that the government controls testing, funding and staff. Without

governmental assistance, developing test norms is difficult to accomplish. Other issues included test security, test over-exposure and conditions of testing as factors that are slowing the development of computer-assisted career guidance in Taiwan.

The issue of international career testing is one that is just beginning to gain some attention. At this point in time, we can identify the following concerns, based on the articles above:

- Translation does not equate with cultural applicability
- Occupations, work tasks and occupational structures of the U.S. are not generalizable to those of other countries
- Culture-specific validity and reliability must be established for each inventory; it is incorrect to assume that because a test has high validity and reliability in the U.S., that it will demonstrate the same in other countries
- The costs associated with test training, purchasing tests, software or licenses can be prohibitive
- The philosophy of how a career choice is made, the power of career tests, and who is in control of making career decisions for individuals need to be addressed before an inventory is selected

While many practitioners may not see themselves as counseling in another country, in today's global workplace, it is easy to see how a practitioner who engages in online career counseling might very well have a career counseling client who is from another country. Another common situation is with providing career counseling to international students who hope to return to work in their home country. It is then that these issues and others (i.e., ethical issues regarding online career counseling and using career assessments online) become more pertinent. Practitioners interested in learning more about international issues with respect to testing should refer to the *International Journal for Vocational and Educational Guidance*.

One-Shot Career Counseling

People have different expectations for career counseling. Some take a realistic approach and expect to spend considerable time in individual study and in counseling encounters. Others expect practitioners to analyze their assessment results and prescribe a career in one counseling session (Cronbach, 1984; Prediger, 1980). At the most, clients seem to expect career counseling to only require a maximum of three sessions (Galassi, Crace, Martin, James, & Wallace, 1992). To illustrate this second kind of expectation, imagine yourself as a practitioner in the following two cases.

Two Examples

Ying, a high school senior, drops by the counseling office one week before graduation and tells the practitioner that he would like to know what major he should select for his first summer session in college: "I would like to take the test that will tell me what to major in." As Ying sees it, the test holds the key to his future.

Ann, a second-semester college sophomore, makes an appointment in the college counseling center during mid-semester break. She explains, "I would like to take those tests that will tell me what career I should choose so I can register for the courses next semester." She has an entire half-day to make this decision!

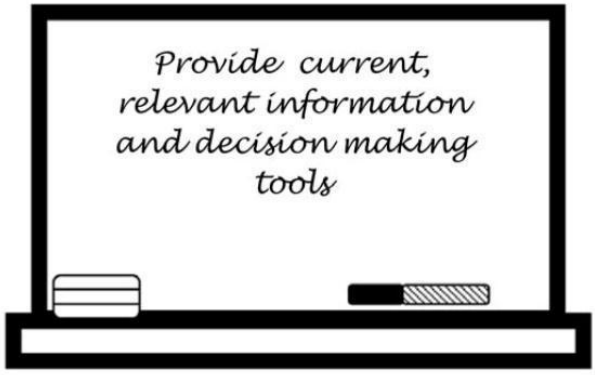
Often, in more subtle ways than these, parents and students expect one-shot assessment interpretations to resolve the issue of career choice, as if believing that tests have a mystical power to foretell the future. The pressure to declare a major or a career immediately is demonstrated best by college students right before a holiday - when they are headed home and will be expected to have an answer for the question, "So, what are you majoring in?" Some clients may very well have high expectations of what psychological tests can do—that is, solve their problems. From that frame of reference, a practitioner's major responsibility is to test clients and place them in the right job, major or career path.

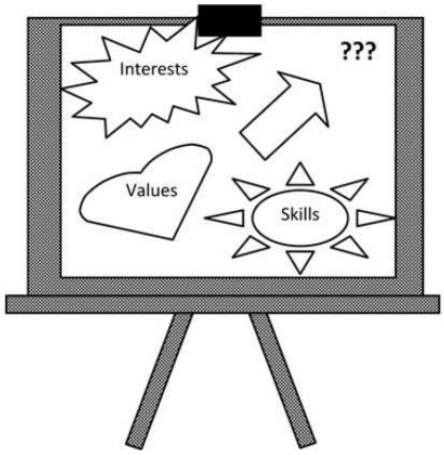
The limitations of one-shot counseling are apparent. First, in career exploration, many decisions are tentative; one-shot counseling approaches give just the opposite impression. Second, there is little opportunity to confirm the decisions based on assessment results. One-shot counseling does not provide for follow-up through observation, continuous discussion of assessment results, or retesting. Third, a one-shot counseling approach affirms the individual's desire to make decisions without devoting time to gathering information and considering alternatives. There is little opportunity to develop a systematic method of decision-making. In effect, the client is seeking the practitioner's approval to approach career decision making from a single throw of the dice without considering alternative information. When faced with a client who insists on making the career decision within one session, the counselor's best option may be to create an itemized plan with recommended steps for making a career decision – but not try to accomplish it all in one session! To point out the folly of making such an important decision with such little thought, the counselor could have the client pull an occupational title out of a bag, or open the *Occupations Finder*, close her/his eyes and point to one, and ask the client to react to that choice. In most cases, this extreme response isn't necessary. By engaging the client in the process, they will see that it is going to take more than 15 minutes to make an informed career choice.

Ideally, the use of assessment results should be only one phase of career exploration. Individual characteristics measured by tests and inventories should be only one facet considered in the career decision-making process. Assessment results should be combined with background information for making career decisions over the life span. Practitioners and clients can then periodically verify or reevaluate assessment results along with other material and experiences in the continuous process of career development. In the next chapter, we'll explore models other than one-shot counseling for using assessment results in career counseling.

Career Counseling: Science, Education or Art?

Career development professionals are scientists as well as educators and artists.





As a scientist, the career practitioner relies on well-researched theories and methods to help a client in their situation. The career practitioner should regularly check the professional literature and other review sources of career assessments. Some of these include professional journals such as *Measurement and Evaluation in Counseling and Development,* the *Career Development Quarterly, Buros' Mental Measurement Yearbooks,* and *A Counselor's Guide to Career Assessment Instruments.* As an educator, the practitioner hopefully employs a learner-centered approach of providing accurate information that is useful to the client. The career practitioner is able to translate research findings into understandable terms, as well as explain the nuances of specific test results to the client. As an artist, the practitioner joins with the client in considering all the unique elements the client and his or her environment (culture, family, and so forth) bring that may be brought out through discussion with the client or through assessment results, and to design the client's current situation and to create a promising career path.

Summary

Many factors should be considered when interpreting assessment results, including the original intention for testing, the theoretical framework for interpreting, the cultural appropriateness and relevancy of career assessments, and how career assessment fits into the overall process of career counseling. General guidelines for interpreting test results, as well as international career testing, and the limitations of one-shot counseling, were discussed. In our next chapter, we look more closely at general measurement issues that should be considered when using career assessments in counseling.

Questions and Exercises

1. How does your preferred career theory impact the way you choose and use career assessments?
2. What kinds of tests are most often used for diagnostic purposes? For predictive purposes? Explain.
3. Describe how you will evaluate your multicultural competencies with respect to using career assessments.
4. What role might culture play with respect to career assessment? What issues should a culturally competent career practitioner be aware of?
5. Describe one circumstance where assessment may be used as (a) a diagnostic tool, (b) a predictive tool, (c) a means of comparing an individual with a criterion group, and (d) for developmental purposes.
6. How would you answer the request of Ying, the high school senior used as an example of one-shot career counseling?
7. What type of activities might you have students and adults engage in to assess and develop their level of career competency?
8. If you are providing online career counseling with a person from another country, what are some of the issues you should consider?
9. Compare and contrast national versus international issues with respect to testing.
10. What type of creative activities might you design to help clients or students accomplish one of the goals outlined in the National Career Development Guidelines?
11. Roleplay interpreting a career inventory with a colleague. Which of those steps was most useful? How would you change your approach with future clients?

CHAPTER 3

SOME MEASUREMENT CONCEPTS

In this chapter, we discuss several basic measurement concepts and methods of interpreting assessment results to help improve the career practitioner's skill in selecting and using standardized instruments. Later chapters will make numerous references to the material in this chapter in describing specific tests and inventories. The information found in this chapter is contained in separate chapters in most assessment textbooks. We have combined this information here to provide, first, an overview of the common elements used in assessment interpretation; second, the information necessary for comparing the strengths and weaknesses of currently used methods of score reporting; and third, definitions of measurement concepts for easy referral.

Advanced Organizer
In this chapter, we will cover the following topics:

- Norms
- Score Profiles
- Transformation of Scores
- Criterion-Referenced Measures
- Accuracy of Measurement
- Correlations
- Summary
- Questions and Exercises

Norms
One of the most important questions a career practitioner must consider when selecting an inventory is whether or not the tool is appropriate for the client. Of course, the first consideration is the client's needs and the instruments available, but the second question must be how appropriate the tests under consideration are for the specific client and their career needs. The determination of test appropriateness should be partially based on whom the test was piloted, or for what groups the test has been shown to have value (through additional research). If the test was normed on college students, using that inventory on elementary or middle school students would be unethical.

The usefulness of assessment results in career counseling is determined by norms. In using norms, the practitioner should consider:

- When norms should be used;
- What kind of norms should be used; and
- How much weight should be given to norms.

Norms represent the level of performance obtained by the individuals (normative sample) used in developing score standards. Norms can thus be thought of as typical or normal scores. Norms for some tests and inventories are based on the general population. Other norms are based on specific groups such as all 12th-grade students, 12th-grade students who plan to attend college, left-handed individuals, former drug abusers, former alcoholics, or individuals with physical disabilities.

Norm Tables
The organization of norm tables varies somewhat from test to test. For example, the manual for the Self-Directed Search lists separate norms for males and females by middle school, high school, college and adult levels for two letter and three letter Holland types (Holland & Messer, 2013). The ASVAB provides norms in terms of gender (male, female, combined gender) and other demographic characteristics.

The normative sample description is critical for understanding if a test should be used. In some manuals, only a brief description is given, leaving practitioners to assume that their clients resemble the normative population. Others, such as the Kuder Career Search, provide specific definitions of normative groups. Such detailed descriptions of persons sampled in standardizing an inventory provide good data for comparing the norm samples with client groups. In many instances, more information would be useful, such as score differences between age and ethnic groups and between individuals in different geographical locations. The more descriptive the norms are, the greater their utility and flexibility.

When using norms, practitioners must carefully evaluate the population from which the norms have been derived to determine whether that population resembles their clients in background and individual characteristics. We would not want to use norms derived from a sample of Puerto Ricans in the Northeast to

advise a group of Chinese students on the West Coast. However, norms derived from Puerto Ricans in the Northeast are more appropriate for use with Puerto Ricans living elsewhere in the country than are general-population norms.

National Norms

National norms, sometimes referred to as general-population norms or people-in-general norms, are usually controlled in the sampling process to be balanced in geographical area, ethnicity, educational level, sex, age, and other factors. National norms may be helpful in determining underlying individual characteristics and patterns. For example, an individual whose measured values suggest only an average need for achievement compared with that of business executives and entrepreneurs may exhibit a moderately high need for achievement when compared with people in general. This information suggests an underlying or secondary need for achievement that might not otherwise have been clarified. The identification of lower-order yet important personal traits affords greater depth for career exploration.

In many instances, national norms should not be used. National norms based on a sample of 12th graders are of little value in predicting success in a particular university; appropriate norms would be those derived from students who have attended the that specific university. Likewise, norms based on a general population are not useful in predicting success in a certain job at a local factory. Selection and placement in an industry are usually based on norms derived from workers in a specific occupation or work setting.

Local Norms

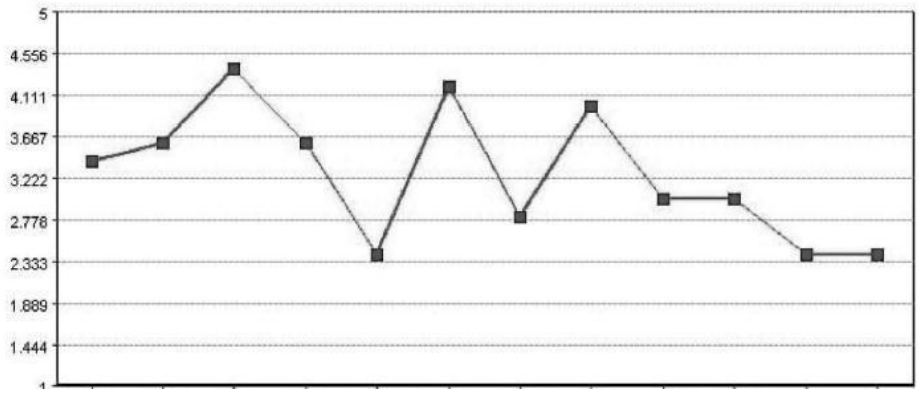
Because operational and educational requirements vary from one location to another, using local norms is recommended. For example, you will recall that in Chapter 2, Noelle wanted to know her chances of success at the local community college. In this case, the practitioner had collected data from former students of Noelle's high school to develop an expectancy table based on test scores and grades earned at the college by students who had attended the high school from which Noelle was graduating. This information was very helpful and more personal than national norms.

Although more weight can be given to local norms than to general norms and local norms should be developed whenever possible, practitioners usually do not have the time and resources required to devote to such projects. Most practitioners must rely on the published norms furnished in test and inventory manuals. Most of the counseling cases discussed in later chapters illustrate the use of assessment results with published norms.

Score Profiles

In early counseling approaches, the profile served as the primary tool for making one-shot predictions of vocational choice (Goldman, 1972; Prediger, 1980). Choices were considered definite and irreversible (Cronbach, 1984). Currently, the score profile is considered as only one source of information on individual characteristics. As can be seen in Figure 3-1, score profiles provide a visual representation of the peaks and valleys in a person's test results.

Figure 3-1: Example of Score Profile



They help to identify what falls within the "normal" range, as well as indicators of where the individual scored higher or lower. Regardless of the instrument, these results should stimulate questions for the counselor, such as:

- Do the results confirm the hypotheses I had about this client?
- Do they provide us with new information or confirm pre-existing information?

- Are there any interesting combination of peaks and valleys? For example, does the combination of high scores on External Conflict and Decision Making Confusion on the Career Thoughts Inventory suggest that significant others might be adding to the confusion an individual is experiencing?
- Do the results provide me, as the counselor, with any ideas of interventions that might better suit my client? For example, I might have originally thought that my client would find researching occupations online useful, but after seeing that the client has a very high *Social* score, I might suggest informational interviewing instead.

To make assessment results as meaningful as possible, computer-generated narrative reports or computer-based interpretations are increasingly being used as supplements to the profile. The computer uses logarithms to interpret the score results in narrative form according to a planned program, and these narrative reports are often sent directly to students and parents, or can be printed out for the clients. Score profiles alone do not always stimulate individuals to explore careers. Exercises such as workbooks or written exercises significantly increase the effectiveness of career interventions such as career assessments (Brown & Ryan Krane, 2000). Although supplements to profiles may prove helpful in stimulating career exploration, the career practitioner should not completely abandon the role of interpreting the profile. In fact, the potential for increasing the number and variety of computer-generated score interpretations in the future is almost a mandate for practitioners to sharpen their skills in this respect. Receiving a generic report can be useful because the client can assume there is no bias evident. The computer is not taking into consideration the unique nuances of the client's background, cultural values, and biases. The report is a strict output of the data that was inputted. However, this is also a weakness of the report. For example, what happens if a client's scores generate a list of 3-5 career options? The counselor may be able to help the client expand her or his list based on their knowledge of the client's preferences or unique background.

Score profiles can be represented in many different ways. Often times, scores will be plotted in a fashion similar to Figure 3-1. At other times, t-scores or percentiles may be reported and presented in a graph. Or, in some cases, just the scores are reported.

Regardless of the format of the score profile, three important principles of interpretation must be followed:

- differences between scores should be interpreted with caution,
- profiles should be interpreted with concern for the influence of norms, and
- scores should be expressed in ranges rather than in points.

Differences Between Scores

Caution must always be used when interpreting differences between scores on a profile. Small score differences are meaningless and should be attributed to chance effects. Clients may be tempted to make much more of small score differences between subtests than is plausible. Still, one should not eliminate second-, third-, or fourth-order measured interests and consider only highest measured interests in career exploration. Although, if one scale is highly elevated above other scales, more weight should be given to that highest scale.

Example

Matteo's scores on the Self-Directed Search were as follows: R=52, I = 30; A=28; S=12; E=14; C=27. Taking the highest scores, his code would be calculated as "RIA". After looking at an initial list of occupations related to that code, the practitioner (or computer) will mix up the codes to be RAI, IAR, IRA, AIR, and ARI. This will likely yield very few additional options that he will like, as Matteo clearly has a preference for "R" type careers. In this case, a better strategy would be to keep the "R" in position one, and look at occupations matching the following: RIA, RAI, RIC, and RCI. "C" was included because it was a close score to "A."

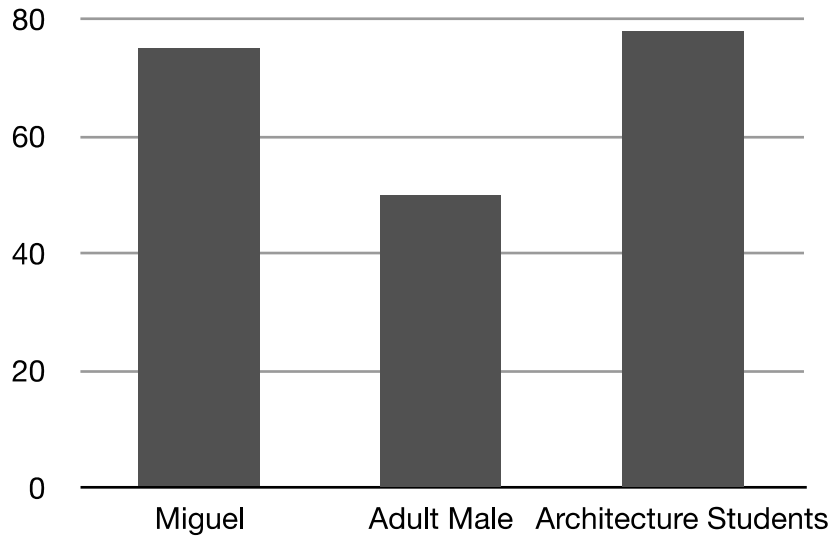
Likewise, when the scores are relatively flat (e.g., R=32, I = 30; A=28; S=21; E=22; C=27), the practitioner should not focus solely on the high score, in this case, "R," but should look at various permutations. At the same time, you might say that the best intervention is to just give the client the *Dictionary of Holland Occupational Codes*. Obviously, that would be overwhelming. A better option would be to ask the client to prioritize the types based on the descriptions of each type provided in the computerized report, and then look at the options represented in the top three types chosen. To point a person narrowly to a slightly higher measured characteristic is counterproductive in developmental counseling.

Relation of Norms to the Shape of a Profile

An individual's profile must be carefully interpreted in light of the norm reference group. The position of scores is determined by the norms used. For example, Miguel, who is interested in architecture, has taken the Differential Aptitude Test. His score profile compared with that of men in general suggests that his general abilities are high enough for him to consider college. To obtain a reliable estimate of his chances of success in a school of architecture, his scores were compared with norms derived from architecture students. The shapes of

the profiles were quite different. When Miguel's scores were plotted against those for men in general, all were considerably above average. When compared with scores of architecture students, most of his scores were in the average range (See Figure 3-2).

Figure 3-2: Comparison of Individual Scores with National and Local Norms



This profile gives a much more valid estimate of Miguel's chances for success in a school of architecture than does the general profile. Whenever possible, score profiles used for predicting performance should be compared with those of competitors (Cronbach, 1984).

Scores as a Range

On some score profiles, results are reported as points on a scale; on others, scores are reported as a range that includes the error of measurement of each test. The range may be represented on a percentile graph by a bar, line, or row of x's, with the obtained percentile at the center. The purpose for this is to show where a person's true score might actually be. We know that the obtained score on a test on any given day likely differs from the person's true score. For example, if a person was praised or criticized, or was feeling unusually good or bad just prior to completing an inventory, the inventory might not reflect the person's real or true score. Showing a range (also known as confidence bands) reflects where the individual's true score more accurately than does the single-point method.

Because career development is a continuous process, the score profile provides information from which only tentative decisions need be made. These decisions, not being binding or irreversible, provide information on which to base a further study of individual characteristics. Therefore, the range is more appropriate as a reference for individual decisions than is a single point. Because we are usually not able to obtain precise measures in career exploration, the standard error of measurement should be considered for all scores recorded as a single point on a scale. An easy way to do this is to transform the scores using the standard deviation of the test or sub-scale

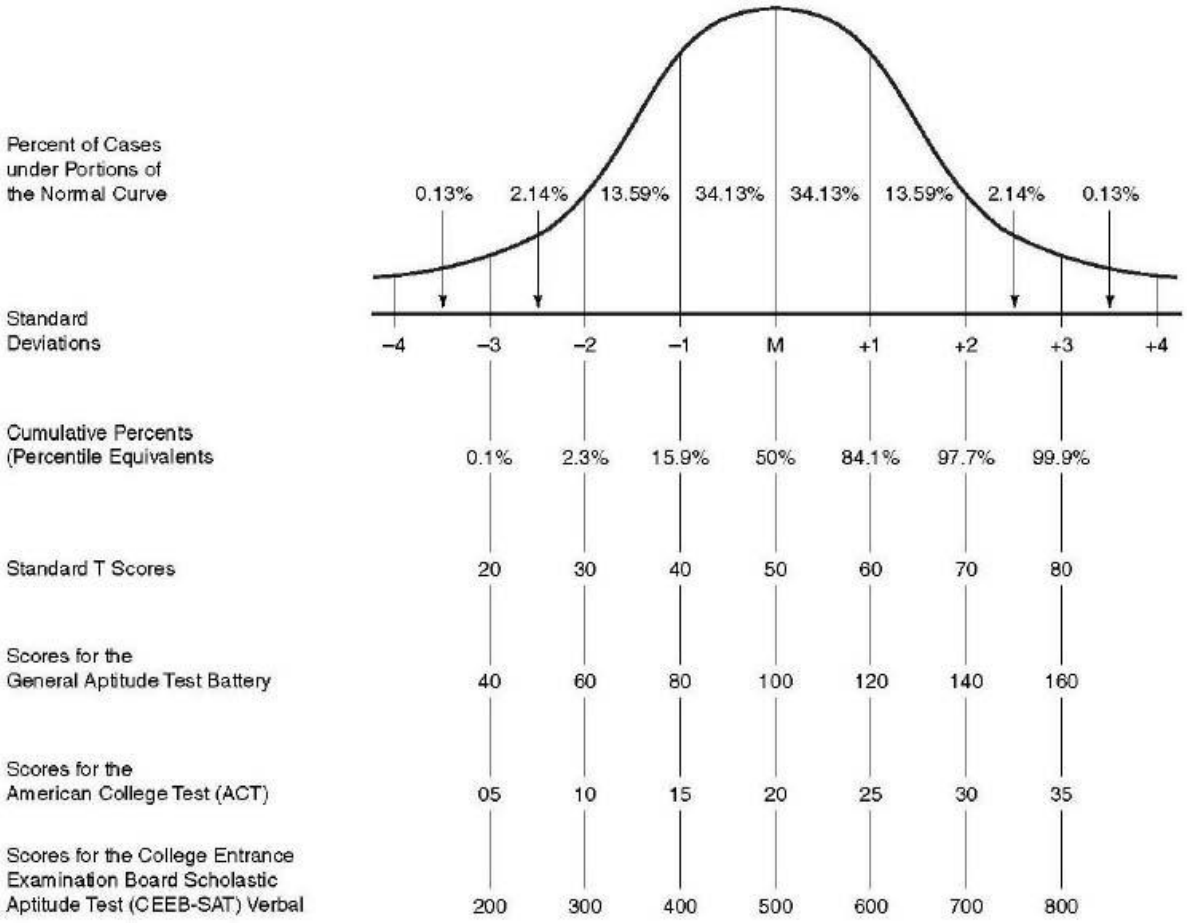
Transformation of Scores

Client raw scores on a test are rarely useful to a career practitioner. Raw scores on their own can be difficult to interpret. What does a 52 mean? Is that good? bad? average? Trying to keep track of what raw scores actually mean, especially when talking about more than one inventory, is near to impossible. That's where transformation of scores comes in handy – and, most computer-generated profiles do this us! Even on the ones that don't, it doesn't take much effort to transform them manually. In this section, we'll review the normal bell curve, as well as how to interpret transformed scores, which may be reported in the form of percentile equivalents, standard T scores, stanines, or grade equivalents.

Bell-Shaped Curve

Two of the most prominently used methods of interpreting assessment results are percentile equivalents and standard scores. To obtain an understanding of the relationship between these two reporting procedures, refer to the well-known normal, or bell-shaped, curve in Figure 3–3. M represents the mean, or midpoint (50th percentile), with 4 standard deviations on each side of the mean.

Figure 3-3: Scores Plotted on a Normal Bell Curve



Starting at M, go to the right to +1 standard deviation and note the percentile equivalent of 84 (in rounded numbers). Likewise, go to the left of M to -1 standard deviation and find the percentile equivalent of 16. You will notice that other percentile points can be obtained for each standard deviation. Understanding the relationship of percentile equivalents to standard deviations and their relative positions on the bell-shaped curve helps interpret test scores. For example, a percentile score of 98 is 2 standard deviations from the mean. A score equal to 2 standard deviations below the mean is approximately at the 2nd percentile.

Referring to Figure 3-3 you can see also that a General Aptitude Test Battery (GATB) score of 120 is 1 standard deviation above the mean, or at the 84th percentile. An ACT score of 25 is at the same relative position. These two scores are not to be regarded as equal. The standard scores for each test were developed using samples from different populations, and each test is quite different in content. However, two standard scores can be compared by their relative position under the normal bell-shaped curve. For example, an ACT score of 25 is at the same relative position within its reference group as a GATB of 120.

It is useful at times to compare an individual's score to where the majority of the scores lie. For example, +1 or -1 standard deviation from the mean will capture approximately 68% of the variance. (To obtain the 68%, you add the 34.13% that is contained within-1 standard deviation and the 34.13% that is contained within +1 standard deviation). People whose scores are closest to those of the norm group will score within + or - 1 standard deviation from the mean. As you move out further from the mean, the frequency of people scoring in that range becomes fewer. For example, one of the qualifications of being labeled as gifted is an intelligence quotient of 130 or higher. The mean for most intelligence tests is 100, and the standard deviation is 15. So, to meet that specific criterion for giftedness, a person would need to score 2 standard deviations above the mean. If you learn that a person's score is 2 or 3 standard deviations above or below the mean, you conceptually know that their score is outside of what the normal scores typically are.

This isn't necessarily bad. For example, a person scoring three standard deviations above the mean on career decidedness is someone who has a very clear sense of what they want to do. However, someone who is three standard deviations above the mean on dysfunctional thinking has some major internal barriers to making decisions.

Percentile Equivalents

Percentile equivalents are sometimes easier to interpret than standard scores. Using Figure 3-3 and a GATB score of 63, you can determine the exact percentile equivalent. Here's the process:

First, you need to find the 1% increase between 60 and 80. These numbers aren't chosen arbitrarily. 60 lies at -2 standard deviations, and the next GATB number reported is 80, which lies at -1 standard deviation. 63 lies in between those numbers. Steps are required to find the 1% increase, including:

a. Find how many numbers lie between the range for the observed score.
- 80–60 = 20

b. Calculate the difference between the standard deviations around the observed score.
- 15.9–2.3 = 13.6

c. Divide the SD difference by the number of integers between the range surrounding the observed score to determine the 1% increase.
- 13.6/20 = .68

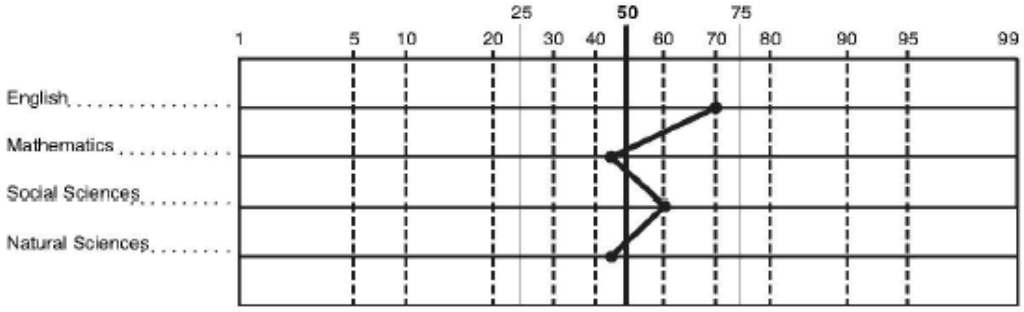
d. Multiply the 1% increase to the number that you want to increase the score by. This will give you the percentage increase to add to the lower percentage (in this case, 60).
- We want to get to 63, and we already know the percentile for 60. We need to move up from 60 to 63, or by 3. So, we multiply .68 by 3.
- .68 * 3 = 2.04

e. Determine the percentile equivalent.
- The percentile equivalent for 60 is 2.3.
- To gain the percentile equivalent for 63, you'd add 2.04 to 2.3.
- 2.3+2.04 = 4.34

f. Double-check your answer. We know that a GATB of 65 = 5.7 percentile. If our calculations are correct, when we multiply .68 times five and add that to 2.3 we should get 5.7 (.68*5 = 3.4 + 2.3 = 5.7).

In Figure 3-4, a typical test profile is constructed to depict percentile equivalents.

Figure 3-4: Percentile Equivalents



Note the heavy line representing the midpoint and the thinner lines representing the 25th and 75th percentiles, the average range for this particular achievement test. The difference in scores between the 25th and 75th percentiles is not as great as may appear. Refer to the bell-shaped curve in Figure 3-3 and notice that to move several percentile points within the average band does not take as great a performance as it does to move the same number of percentile points beyond the 75th percentile. Thus, the practitioner needs to be cautious when interpreting differences in scores within the average range; the difference in performance within this range may not be as significant as it appears.

Percentile equivalents are direct and relatively easy to understand, which is a primary reason for their popularity. However, it is important to identify the norm reference group from which the percentile equivalents have been derived. Norm-referenced tests can be based on local, state, regional, or national data or on data for selected groups such as all high school seniors (nationally) who are attending college or all college seniors in the western region of the United States. One of the problems is with the interpretation of percentile equivalents. People tend to interpret a 45% as failing, or a 95% as an "A." We attach labels to these percentile equivalents that aren't always appropriate. Thus, to effectively communicate test results, the norm frame of reference should be established. For example: "From a national sample, 60 out of 100 high school seniors who attended college scored lower than you did, while 40 out of 100 scored higher."

Standard Scores

Normalized standard scores used in tests and inventories are based on standard deviation units in a normal distribution. Test developers determine what the average score is for the norming group and assign a value to it. They then determine where the major differences occur within the norming group by seeing how far off the next group of test-takers are from the mean (i.e., determine the standard deviation from the mean). Figure 3-4 shows the percentage of scores within each standard deviation unit and standard scores used by selected standardized tests. The first, the standard T score, have an average of 50 and a standard deviation of 10. The T score has a range of 20 to 80, extending 3 standard deviations above the mean and 3 standard deviations below the mean. For all practical purposes, the entire range of scores of 99.72% of the cases will fall within +3 and -3 standard deviations. The middle 68% of the scores are within +1 and -1 standard deviations.

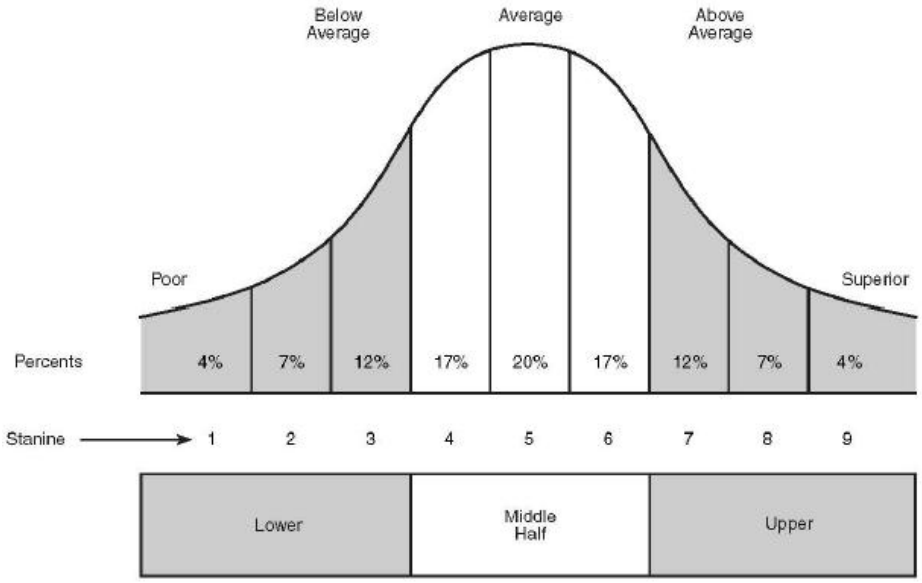
Approximately 95% of scores will fall between ±1.96 standard deviation units. A T score of slightly less than 60 is in the top 20% for a given test. Such points of reference make the standard score a valuable tool for interpreting assessment results. For example, a meaningful interpretation can be made of a score that is 1.5 standard deviations from the mean when normalized standard scores and their relationship to standard deviations are understood. Thus, the relative position of the standard score under the normal distribution provides a discernible point of reference for that score's variation from the average.

Sometimes, you may see scores reported as z-scores. Z scores have a mean of zero and range from -4 to +4, with each number landing on the standard deviation. For example, someone who is 2 standard deviations above the mean will have a z score of 2, or if they are 3 standard deviations below the mean, they will have a z score of -3. A frame of reference can easily be established for standardized tests by thinking about their scores in the same way. For example, a GATB score of 120 is 1 standard deviation from the mean, or at the 84th percentile. Likewise, 1 standard deviation below the mean (16th percentile) is equal to a GATB score of 80. The middle 68% of the scores are between the standard scores 80 and 120. A meaningful interpretation can thus be given to any standard score when the mean and standard deviation are known.

Stanines

A stanine (short for "standard nine") is a standard score on a scale with nine approximately equal units, and an average of about 4.5 with a standard deviation of 2. The advantage of the stanine is that scores are presented as a range rather than as points on a scale, as shown in Figure 3-5. In a normal distribution, the lower level (1) represents the bottom 4% of the cases; stanine 5 represents the middle 20%; and stanine 9, the highest level, represents the top 4%. Thinking of a range rather than a point for score interpretation is more descriptive and deters emphasizing small differences. To be of practical significance (a distinction worth talking about with the client or altering interventions), the difference between stanine scores must be 2 or more.

Figure 3-5: Stanines and the Normal Bell Curve



Stanine scores may also be thought of in broader categories, as Figure 3-5illustrates. For example, stanine scores 1, 2, and 3 are considered below average; stanine scores 4, 5, and 6 are considered average; and stanines 7, 8,

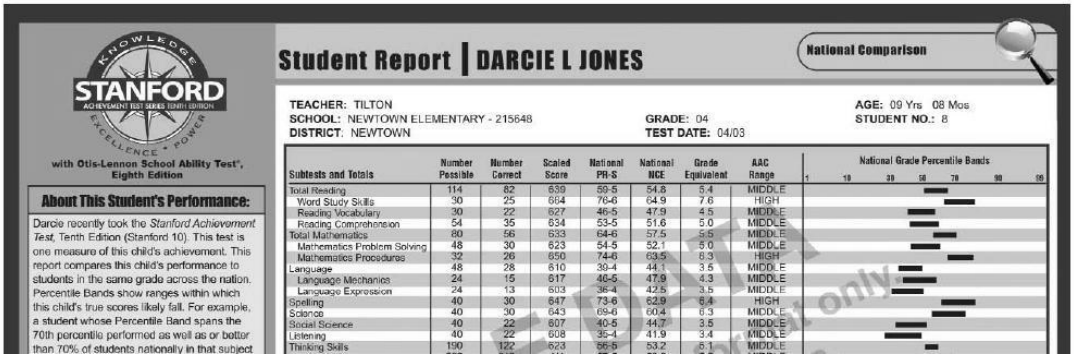
and 9 are above average. Cumulative percentile points (Figure 3-5) provide further possibilities for interpreting stanines as lower quarter, middle half, and upper quarter.

Grade Equivalents

Because of the familiarity of grade placement and its frame of reference, grade equivalents are often used to interpret achievement test scores. Norms for grade equivalents are derived from average raw scores of students in each grade level. These equivalents are expressed by a number representing grade level in combination with the ten months of the school year, September through June. For example, 10.0 represents the beginning of the tenth grade in September; 10.5 represents average performance in February of that academic year.

Because of the idea of placement within a grade, misinterpretation of grade equivalents can occur. For example, in Figure 3-6, this 4th grade student received a score of 6.3 on the science portion of the Stanford Achievement Test. This result **should not** be interpreted to mean the student has mastered the science courses taught in the 4th grade and the first half of the 6th grade and can now be placed in the second half of the 6th-

Figure 3-6: Sample Stanford Achievement Test Result



grade science class. No doubt, the student has performed admirably on the science test, but grade equivalent scores are not to be regarded as performance standards. In this example, the student's raw score is close to the median or mean raw score made by students in the middle of the 8th grade. Although the student might have performed very well on the lower primary form of this achievement test, there were no 6th grade level items on the test given to 4th graders (Drummond and Jones, 2009). Also, grade equivalents are not to be considered comparable for all scales. For example, in the fifth grade, growth in learning a particular subject such as mathematics will be much greater than it will be in the ninth grade. Additionally, counselors should remember that a single grade equivalent score, as is true with all instruments, provide a snapshot, not a video of a person's abilities, interests and so forth. For many achievement tests that provide grade equivalent scores, counselors are recommended to use the National Percentile score instead.

Criterion-Referenced Tests

Criterion-referenced tests evaluate a person's knowledge or skill as it relates to an established knowledge base. In these types of tests, there are right and wrong answers (or better answers). In criterion-referenced measures, an individual's score is interpreted by its relative position within the distribution of scores obtained by the standardization sample or other groups of special interest. In other words, the interpretation of criterion-referenced test scores is based on how well the individual's performance matches a set of standards or external criteria judged by the test user to be suitable for the individual's grade level. The focus is on levels of performance within a limited range of specific skills or content. For example, criterion-referenced scores provide an index of how well an individual has mastered arithmetic computations or certain reading skills.

In criterion-referenced tests, specific information is provided as to what the individual is capable of doing: for example, "The subject was able to subtract numbers with decimals" or "The subject used the correct verb form in a sentence." Scales from a criterion-referenced test are used to determine an individual level of performance with reference to a specified content criterion. Examples of criterion-referenced tests that a career counselor might see include those that focus on competency, basic skills, mastery, performance, and credentialing. In addition to understanding different types of measures, a skilled career practitioner must also understand concepts of measurement accuracy.

Accuracy of Measurement

This section presents several concepts regarding the accuracy of measurements that should also aid the practitioner in transforming assessment results into meaningful interpretations. Most importantly, you must consider the reliability and validity of the instrument under consideration. Second, to understand the relative

position of a score, the practitioner must be aware of inherent error, which is specific for particular tests. Third, significant differences that may exist among subtests on any one test greatly affect the interpretation that may be given to the test results as a whole. Finally, inaccuracy in interpreting assessment can be reduced by constructing locally based expectancy tables. These concepts and their application to test interpretation are discussed and illustrated in the paragraphs that follow.

Reliability and Validity

Reliability. Reliability is one of the first requirements for good measurement. Reliability looks at how consistently a test measures the construct under consistently, and the degree to which tests scores are free from error. Since no test is completely free from error, the counselor should consider that a client's observed score on a test is actually their true score with some error added in. Reliability coefficients provide an estimate on how stable, reliable or consistent a given test is. Reliability coefficients are correlations of a given instrument with itself, parts of the inventory, or among alternate forms of the same test, and range from .00 to 1.00. Strong reliability usually ranges between .85 and .95. Test-retest reliability occurs when the same test is given more than once over a period of time to see how stable the results are. Of course, the time between the two testing periods can impact the reliability coefficient. If the two testing times are too close together, the reliability is likely to be very high, and if there's too great a distance, the reliability is likely to be lower, because of other events or variables that could influence the score.

Not all tests should have strong test-retest reliability. For example, while you would hope that a person's interest types would remain stable over time, you would hope to actually see changes in a person's career decidedness or career beliefs over time. Cronbach's alpha is a common statistic that is reported for tests that use Likert-scale items (i.e., items that have more than 2 potential responses, such as "always, often, sometimes, occasionally, never"). KR-20 is used for items that have only two response such as true/false or yes/no responses. Factors that influence reliability include the length of the test (longer tests have higher reliability), type of scoring (objective scoring has higher reliability than subjective scores), variability of the group on which the test was given (heterogeneity has higher reliability), and the difficulty of items on the test (questions that are too easy or too hard decreases reliability).

Validity. Validity answers the question, "Does the test measure what it purports to answer?" An inventory that claims to measure interests shouldn't actually be measuring skills, unless it is also claiming to measure skills. The range of validity coefficients often run much lower than that of reliability coefficients, because the test is being compared to other tests (and not itself). Validity coefficients rarely go above .60 and are more typically in the range of .30 to .50. Three types of validity include content, criterion-related and construct. *Content validity* considers the actual items on a test, and is often determined by an expert panel. For example, the statement, "I am good at problem-solving" would be a valid test item for a skills test, but questionable for an interest inventory. Sometimes tests can be misleading in their validity claims. For example, does a test that is supposed to measure math skills REALLY measure math skills, or is it composed of word problems of such reading difficulty that it is actually testing reading ability instead?

Criterion-related validity shows the degree to which the test is related to an outcome. For example, achievement test scores are often used to predict whether a student will be successful in college. To determine the criterion-related validity in this case, a researcher would collect the achievement test scores as well as an indicator of success in college, such as grade point average at the end of the first year in college. Criterion validity can be use either predictive or concurrent in nature. *Predictive validity* is used for situations like the one described earlier, i.e., when we want to use the test scores to predict or estimate future criterion scores, in this case, first year college GPA. *Concurrent validity* is looking at whether one test can be substituted for another test. Basically, a test-taker completes a test and another measurement of the criterion at the same time, and comparisons are made. If there is a strong relationship between the two, the researcher can have confidence that the test is valid to measure the desired criterion.

Construct validity answers the question, "Do the test results make psychological sense?" Another way to put it is, "Does the test actually measure the construct it is intended to measure?" For example, the test says it is measuring career satisfaction. We would expect that test to be strongly correlated with tests or other constructs that are related to career satisfaction (convergent validity) and negatively correlated with tests that are not related to satisfaction (*discriminant validity*). Often times, factor analysis is used to determine these relationships.

Standard Error of Measurement (SEM)

A score on a test should not be considered an exact point without any error. It is important to always keep in mind that the score a person obtains on a given inventory on a given day is not likely to be their true score, but that some "inherent error" exists. It is much more accurate to think of test scores as estimates of true scores. Thus, an individual's performance on a test can best be thought of as falling within a range or a band rather than as a point on a scale. The SEM is an estimate of the amount of error in a particular test score; it is often provided

in the test manual. (If it is not in the manual, you can calculate the SEM by multiplying the standard deviation times the square root of 1 minus the reliability coefficient). By using SEMs, we are able to increase our confidence in interpreting scores as we use the SEM to construct "confidence bands" around a person's observed score. This enables us to say, "While your score was 85 today, we are 95% confident that your true score lies between 75 and 90."

Consider the table of fictitious achievement scores on a reading scale below (Figure 3-7). The circles indicate the student's observed score (with the actual number listed in the "Student" column), and the lines going through the middle of the circle show the confidence bands, or where the student's true score is likely to be. The outlined boxes show the average mastery range, and the shading within

Figure 3-5: Demonstration of Standard Error of Measurement

	Student	Average Mastery Range	50	75	100
General Understanding	91	48-70			
Test Analysis	92	52-75			
Comprehension	65	50-70			
Applying meaning	70	45-73			

the circles indicate the student's level of mastery (high is completely darkened, moderate is half darkened). With this understanding, the practitioner can interpret that the student is far above average on General Understanding and Test Analysis areas, and within average on Comprehension and Applying Meaning subscales.

You can calculate for any percent of confidence; however, it is easier to use the percentages represented on the normal curve at +/-1, +/-2 or +/- 3 standard deviations. To determine where someone's true score lies 68% of the time, you would calculate the SEM for +/- 1 standard deviation. To do this, you would multiply the standard deviation by 1 (because you want to know where the true score lies 68%, or +/- 1 SD of the time) and then add and subtract that number to the observed score to get a range. However, being able to predict 68% of the time isn't that impressive. So, you decide that you want to be able to predict 95% of the time (which is +/- 2 standard deviations), you would take that standard deviation and multiply it by 2 (for 2 standard deviations) and then add/subtract that number to the mean to obtain your range. You would follow the same procedures to obtain the confidence bands for 99%.

The traditional approach to using the SEM is illustrated by the following example. An individual, Patricia, receives a score of 105 (observed score) on a test that has a reported SEM of 5. We now want to obtain an estimate of the person's true score. Because of errors of measurement, observed scores are assumed to be normally distributed around the true score. Hence we can refer to standard deviation units to give us the limits of observed scores. In this example, the SEM is used as a standard deviation (SD). Therefore, Patricia's true score can be calculated.

- To determine where her true score lies 68% of the time:
  - Start with her score of 105
  - Add and subtract 1 SD (5) to her observed score.
  - 105 - 5 = 100.
  - 105 + 5 = 105.

This gives us confidence that Patricia's true score lies between 100 and 105 (68% of the time).

- To determine where her true scores lies 95% of the time:
  - Start with her score of 105
  - Add and subtract 2 SD (2 *5 = 10) to her observed score.
  - 105 - 10 = 95.
  - 105 + 10 = 115.

This gives us confidence that Patricia's true score lies between 95 and 115 (95% of the time).

Over all individuals, true scores lie within this band 95% of the time. Therefore, the probability is high that the true score for the student in the example is between 95 and 115, and the probability is somewhat lower that the true score is between 100 and 110. What you can observe from this, is that as our confidence increases (we can say we are 95% certain where her true score lies), the range becomes larger, and thus our statement may lose some of its power. How powerful is it to say that you are 99% confident that a person's age lies between 0 and 100? Obviously, the standard deviation has a large impact on how wide the confidence bands will be. So, you need to determine the best balance between the observed score, standard deviation and confidence bands for each client and test.

Standard Error of Differences (SED) Between Two Subsets

In career counseling, it is often necessary to be certain when differences in subtest scores are significant. The differences between scores can be ascertained by computing the SED. The following example illustrates this method.

A multi-aptitude test battery reports T scores (mean = 50 and standard deviation =10) for interpretation of subtest scores. On the abstract reasoning subtest scale, a reliability coefficient of .89 is reported. Another scale has a reported reliability coefficient of .95. To find the SED between the two tests, use the following formula:

$$SED = SD\sqrt{(2 - r1 - r2)}$$

$$SED = 10\sqrt{(2 - .89 - .95)}$$

$$SED = 4$$

Where r1= reliability of subtest 1; r2 = reliability of subtest 2

To determine whether the difference between the individual's scores on the test is a real difference rather than simply chance, the SED is multiplied by 1.96. Because ±1.96 standard deviation units on the normal distribution will include 95% of the cases, scores within that range will occur by chance only 5% of the time. In this case, the result is obtained by multiplying 4 by 1.96, which is 7.84, or approximately 8 points. Thus, we can interpret a difference of 8 points or more between the two subtests in our example as being meaningful.

Consider the Self-Directed Search (SDS) that has a SED of 8. The SED is important, because it helps you interpret the scores. If a person's Realistic score is 40 and their Social score is 35, you know that there isn't any significant difference between those two scores. So, in interpreting the results, you'd know that the two scores are interchangeable, and when looking up occupations by codes, the person should look up RS jobs as well as SR jobs. If, on the other hand, the R score was 40 and the next highest code was S, with a score of 20, that's over 3 SEDs away. Then you know that the person will likely be most interested in "R" jobs, not SR jobs (though the person should consider all combinations, as long as the R is first, so RSE, RIC, RAE, RCI, RES, etc.).

Expectancy Tables

In educational planning, a practitioner often has to advise a student of chances of success in a particular college or university. An expectancy table constructed from the records of previous graduates and their performance at the university being considered provides relevant information. In Table 3–1, a sample expectancy table has been constructed from the first-semester grade point averages and ACT composite scores.

The numbers that are not in parentheses are the numbers of students whose grade point averages are in the designated range. For example, two students whose ACT composite scores were in the range 26–28 earned grade point averages between 1.50 and 1.99. Seven students in this same ACT score range earned grade point averages between 2.00 and 2.49. The numbers in the parentheses are the cumulative percents of individuals within a particular ACT score range whose earned grades are in the corresponding grade point average cell or higher. For example, 88% of the individuals whose ACT composite scores were in the 20-22 range earned grade point averages between 1.50 and 1.99 or higher. Likewise, 92% of the individuals whose ACT composite scores were in the 11–13 range earned first-semester grade point averages of .50–99 or higher.

To demonstrate the chances of success at the university being considered, the ACT composite score provides an index of academic success. For example, 81 out of 100 individuals whose ACT composite scores were 23–25 made a 2.00 grade point average or higher. The chances that individuals with the same ACT scores would make a 2.50 or higher grade point average are 48 out of 100.

Table 3-1 Sample Expectancy Table

American College Test (ACT)	First Semester Grade Point Averages							
Composite Scores	0.00-0.49	0.50-0.99	1.00-1.49	1.50-1.99	2.00-2.49	2.50-2.99	3.00-3.49	3.50-3.99
32-35						(100) 1	(67) 1	(33) 1
29-31					(100) 1	(91) 2	(73) 4	(36) 4
26-28				(100) 2	(89) 7	(50) 4	(28) 3	(11) 2
23-25				(100) 5	(81) 9	(48) 6	(26) 6	(4) 1
20-22			(100) 6	(88) 15	(61) 15	(31) 12	(6) 3	
17-19		(100) 5	(92) 6	(83) 24	(46) 22	(12) 5	(5) 3	
14-16		(100) 5	(86) 9	(62) 13	(27) 8	(5) 2		
11-13	(100) 2	(92) 5	(72) 8	(40) 62	(16) 3	(4) 1		
8-10	(100) 2	(85) 4	(54) 5	(15) 2				
5-7	(100) 1							

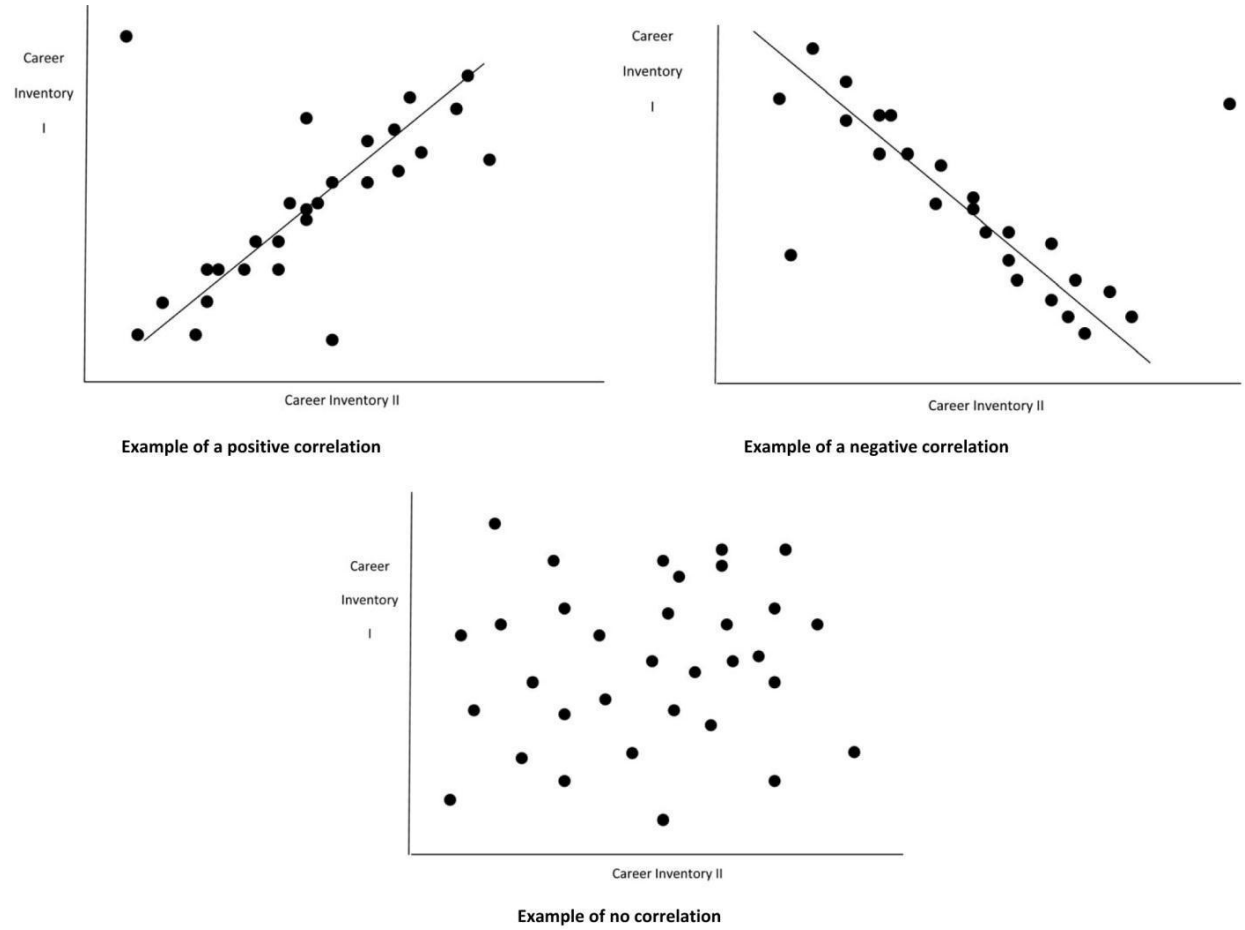
Correlations

Understanding how factors are related help a practitioner make appropriate interpretations and interventions. In measurement, we use the term "correlation" to describe relationships among constructs and scales. Correlations can be positive (when one factor is present, it's likely that another is present), negative (when one factor is present it's likely that the other factor is not), strong or weak, significant or insignificant. Correlations range from -1 to +1. A zero correlation would mean that there is no relationship between the two variables. A score of 1 (either positive or negative) means that there is a perfect relationship. If the score is +1, the two variables are always present together, and if the score is -1, they are never present together. Obviously, most correlations fall somewhere between +/- 1. The actual number is also important. A .23 correlation is much weaker than a .94 correlation. Correlations are generally reported with the symbol r.

Figure 3-8 shows visual representations of positive, negative and no correlations between individuals' scores (indicated as dots) on two career inventories. Imagine that the line is not there, and all you can see are the individual dots (scores). You see that in both the positive and negative correlations, the scores tend to fall in a way that would form a line. In the positive correlation example, scores on Career Inventory I mirror those on Career Inventory II. If one increases, the other increases. If one decreases, the other decreases. In the negative correlation example, scores on Career Inventory I are opposite to those on Career Inventory II. If one increases, the other decreases. If one decreases, the other increases. In both of these examples, this is not always the case.

You can see that there are a handful of scores that don't fall into the line. These are called outlier scores. If you were a researcher, you would look more closely at these outliers to see if there is anything consistent about them (such as, these scores were collected in a certain geographic region, or were for a certain age group, and so forth). There may be nothing consistent about the outlier scores, and they are just "not within normal limits." If there is no correlation between individuals' scores on Career Inventory I and II, you would visually see the third graph. You cannot draw any conclusions about how a person will score on one inventory based on the results of how they scored on the other.

Figure 3-8: Examining Sample Correlations



Why is this useful? If a practitioner administers a decision-making inventory, and the client's scores indicate a high level of indecision, the practitioner might want to know what other issues might be affecting the career indecision. Through research, the practitioner might discover that anxiety is the number one correlate of career indecision, but depression is a low correlate. So, instead of asking the client questions about depression, the practitioner might ask about stress/anxiety instead and might incorporate stress management techniques, or introduce cognitive reframing exercises. It is important to know that correlations describe a relationship, but do not identify which variable is causing the other.

A final consideration when looking at correlations: you will often see a "p-value" behind the correlation. For example, $r = .43$, $p < .05$. The p-value is the amount of likely error in the correlation. Anything below .05 is usually considered statistically significant, meaning the relationship is interpretable and the error is low. If $p = .05$ or is higher, then the relationship does not mean much, statistically speaking. However, it is important data, because it is just as important to know what is related to a variable as it is to know what is not related to it. For example, let's say a study shows there was no relationship between Holland code and intervention preference (e.g., shadowing, card sort, online research, etc.). That would be helpful to know, in that a career practitioner could then feel free to choose any of those interventions regardless of the client's Holland type and not try to match intervention with the person's primary type (e.g., have an artistic client create a collage or draw a picture of their confusion).

Consider the correlation table (Table 3-2) below of partial findings of a study comparing dysfunctional career thoughts and communication apprehension (Meyer-Griffith, Reardon, & Hartley, 2009). The 1's, perfect correlations, occur because the construct is being compared with itself. In reviewing the table, you can see that total CTI (Career Thoughts Inventory) scores (measuring overall dysfunctional career thinking) were positively and significantly correlated to three aspects of communication apprehension, but in different levels. The double asterisks indicate a p value of $< .01$, which means a 99% chance that this relationship was not due to chance. The one asterisk indicates a p value of $< .05$, which means a 95% chance that this relationship was not due to chance. If there is no asterisk, such as in the relationship between communication apprehension and group discussions, it means there is no significant relationship there. You can tell this from the low number, that even though the .18 correlation is significant, the relationship is not very strong.