

Career Exploration Inventory

Professional Manual

Fifth Edition

John J. Liptak



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Table of Contents

General Information.....	iv
An Overview of the <i>CEI</i>	iv
How the <i>CEI</i> Was Developed	iv
About This Professional Manual	iv
Related Materials	iv
Chapter 1: Introduction	1
Why Assess Work, Leisure, and Learning?	1
The Integration of Work and Leisure in Career Counseling.....	2
Enhancing Career Options through Leisure.....	4
The Need for Work/Leisure Interest Inventories	5
Chapter 2: Theoretical Basis for the <i>CEI</i>	6
Based on Two Theoretical Constructs	6
A New Theory of Career Development	6
Leisure and Career Development.....	7
Career and Needs Satisfaction	8
Career and Life Satisfaction.....	9
Career Decision-Making.....	9
Fusing Work and Leisure	10
The <i>CEI</i> in Life and Career Balance.....	11
Chapter 3: Instrument Development and Construction.....	13
Development of the Career Exploration Inventory	13
Construction of the Career Exploration Inventory.....	15
Inventory Format	15
Item Selection and Category Verification.....	15
Basic Interest Categories.....	18
Interest Categories in the First Edition of the <i>CEI</i>	18
Interest Categories in the Second Edition of the <i>CEI</i>	20
Interest Areas in the Third, Fourth, and Fifth Editions of the <i>CEI</i>	20
Theoretical Structure.....	21
Sex Bias	21
Norming Procedures	22
Pilot Studies	22
Field Testing of the <i>CEI</i>	23

Determining Validity and Reliability of the <i>CEI</i>	24
Chapter 4: <i>Career Exploration Inventory</i> Development Results	27
Task Statements	27
Interest Category Arrangement	27
Summary of the Results	29
Content Validity	29
Norms Developed with the Fourth Edition of the <i>CEI</i>	32
Criterion-Related Validity	40
Construct Validity	42
Test-Retest Reliability	45
Utility of the <i>CEI</i>	46
Using the <i>CEI</i> in Career Counseling: Case Studies	48
Barry Jones	48
Valerie Francis	49
Sue Smith	49
Summary of the <i>CEI</i>	50
Chapter 5: Summary and Future Directions	51
Theoretical Structure and Format of the <i>CEI</i>	51
Inventory Development	51
Inventory Construction	52
Summary of the Findings	53
Review of the Inventory's Utility	54
Bibliography	55

General Information

An Overview of the *CEI*

The *Career Exploration Inventory (CEI)* is a career interest test that can be scored and interpreted by the individual test-taker. In addition to measuring interests in major occupational clusters, the *CEI* measures past, present, and future interests in both leisure and learning activities. This approach is unique and should be particularly helpful to many test-takers because it considers major life experiences that are often ignored by other interest tests.

The *CEI* consists of a single device for both scoring and interpreting, rather than separate devices for these two functions. In addition, the *CEI* includes several activities to encourage career exploration and life planning in occupational, leisure, and learning pursuits.

This booklet is designed to accompany the *Career Exploration Inventory*, Fifth Edition (ISBN 978-1-59357-980-7). © by JIST Publishing, Inc., 875 Montreal Way, St. Paul, MN 55102. Phone: 800-328-1452. Email: educate@emcp.com. Website: JIST.com. All rights reserved. Duplication of this document is permitted for internal distribution to staff using the *Career Exploration Inventory*. No other use is permitted without written permission from the publisher. For additional career resources, please visit JIST.com. For a JIST catalog, call 800-328-1452 or visit JIST.com.

How the *CEI* Was Developed

I developed the *CEI* during my doctoral studies at the Virginia Polytechnic Institute and State University. The device was completed under the supervision of Dr. Carl McDaniels, Chairman of the Department of Counselor Studies and Student Personnel Services at Virginia Polytechnic Institute. After its initial development, the *CEI* was revised and published in 1992 by JIST. A second edition was published in 2001, a third edition was published in 2006, a fourth edition was published in 2010, and a fifth edition was published in 2015.

About This Professional Manual

This manual is a revision based on new *CEI* data. It provides professionals with normative data and other information on the *CEI*. You will want to have a copy of the *CEI*, Fifth Edition, as you read this manual.

The professional manual for the first edition of the *CEI* was my dissertation; therefore, it contained a thorough review of the literature related to leisure and career development. Many of the references in the manual, however, quickly became outdated. This fifth edition of the *Professional Manual for the Career Exploration Inventory* reflects more up-to-date reference materials and studies related to the use of the *CEI*. All test development information is being retained from the original dissertation so test administrators will have adequate information about the development of the *CEI*.

Related Materials

Also available to persons interested in using the *CEI* is the *Workshop Manual for the Career Exploration Inventory*, Fifth Edition. The *Workshop Manual for the Career Exploration Inventory*, Fifth Edition, is designed for professionals who are using the *CEI* in a group setting.

Chapter 1: Introduction

Why Assess Work, Leisure, and Learning?

Although career counseling professionals generally assume that work and leisure are related, they seldom agree on the nature of this relationship. The study of the relationship between work and leisure can be traced back to Super's (1940) study of the psychology of avocations. In his study, model railroaders, amateur photographers, and members of amateur symphony orchestras were found to be engaging in their hobbies in one of three ways:

- As extensions of their occupations
- As compensation for their occupations
- As unrelated to their occupations

This classification system is still being replicated in reviews of the literature about the relationship between work and leisure (Champoux, 1981; Staines, 1980) and is used to differentiate the various work/leisure relationships.

Super's (1940) first work/leisure relationship was titled a "theory of self-expression" or a "theory of self-fulfillment." This kind of relationship emphasizes the importance of a person's doing something—whether in work or leisure—that he or she enjoys doing and does well. Parker (1971) suggested this pattern is evident when no distinction can be made between what is work and what is leisure. Wilensky (1960) felt that when attitudes acquired at work become ingrained in the individual, they become a continuation of one's work experiences.

Blocher and Siegal (1981) suggest that in such a "work leisure style," close relationships exist between the two sets of activities. In such, relationships locate in three major areas: The activities may tend to be of a similar nature in terms of intrinsic interests or satisfactions involved; the activities may involve interaction in terms of personal relationships or associations that originate around work; or the activities may involve the physical and social framework within which work and leisure relate. This pattern is what Allen (1980) called "fusion," Parker (1971) called "extension," and Wilensky (1960) called "spill-over."

Super's (1940) second work/leisure relationship was titled a "theory of balance" and emphasizes that one's hobby should be different from one's work. Using this pattern, Parker (1971) suggested that because work has little intrinsic reward, individuals must look to leisure for a sense of identity and satisfaction. Blocher and Siegal (1981) term the second pattern of work/leisure interaction as "supplemental" because leisure activities may be chosen for their contribution to a rounding-out of experiences, which helps establish a generally fulfilling lifestyle. They add that, in this work/leisure pattern, sharp contrasts between work and leisure in terms of activities, personal associations, and physical or social settings may be evident. Bammel and Bammel (1982) contend that, in this pattern, work is seen as the dominant force in life. Thus, leisure is seen as compensating for boredom or excitement at work. This pattern is what Allen (1980) called "polarity," Parker (1971) called "opposition," and Wilensky (1960) called "supplemental."

Super's (1940) third work/leisure relationship was titled a "neutral theory" and is one in which a person's work is satisfying and other interests and abilities do not find expression in the person's occupation. Blocher and Siegal (1981) suggest that this type of interaction between work and leisure can be called "compensatory" because leisure activities may have a driven or compulsive quality and may sometimes involve self-defeating or debilitating consequences.

Parker (1971) conceptualized this work/leisure pattern as one of “neutrality” that notes a detachment from work as well as from leisure. Staines (1980), in his review of the literature, referred to this pattern as a “null” position that views work and leisure activities as being unrelated.

In recent decades, additional patterns of the work/leisure interaction have been suggested, including ones that view leisure as an excellent preparation for work (Bloland, 1984; McDaniels, 1984, 1989; Super, 1984). Super (1984, p. 74) says

Leisure can be thought of as preparation for work, and can be valuable exploratory experiences which help youths to try themselves out in occupationally related activities or adults to develop personal and work skills useful in a variety of occupations.

Other work/leisure interactions have been described in the literature, including leisure as substitution for work (Super, 1984), leisure as conflicting with work because it takes time and energy away from duties of the job (Super, 1984), leisure as vocational exploration (Bloland, 1984), leisure as vocational tryout (Bloland, 1984), leisure as a method of supporting one’s work (Super, 1984), working at home as an outgrowth of leisure interests and skills (McDaniels, 1989), leisure as enhancing the overall life satisfaction of clients (McDaniels, 1984, 1989; Blocher & Siegal, 1981), volunteering as a method of gaining vocational skills (McDaniels, 1989), leisure as a possible source of income in full- or part-time employment (McDaniels, 1984), leisure as a source of entrepreneurship (Liptak, 2007), leisure as a way of dismantling occupational stereotypes and encouraging nontraditional employment (Liptak, 2007), leisure as an antidote for a lack of job satisfaction (Liptak, 2008a), and leisure as a way of maintaining a work-leisure balance (Liptak, 2008a).

The Integration of Work and Leisure in Career Counseling

A closer synthesis between work and leisure concepts is not a recent suggestion. Green (1968) attempted to make a distinction between a “job” as a way of only meeting material needs and “work” as an avocational or vocational activity that is significant to us as people. Wrenn (1973) also suggested the concept of vocation as a calling or sense of mission to effectively integrate paid employment and voluntary work. Others (Bloland & Edwards, 1981; Bolles, 1988; Eason, 1972; Hollis & Hollis, 1976; Loughary & Ripley, 1976; McDaniels, 1984, 1989; Super, 1980) have suggested that career counseling be expanded to include all aspects of one’s life.

In promoting the notion of career being a combination of work and leisure, Liptak (2008a) suggested that in today’s workplace, job satisfaction in and of itself is no longer enough to maintain psychological and physical health and well-being. He suggested that for an individual to be happy and live a life that is (mostly) free of stress, that individual needs to be able to balance work and leisure. He concluded that

In fact, for many people, leisure is the antidote to a lack of job satisfaction. One way that leisure can help people who are bored or lack meaning and satisfaction at work is through compensation. People who are unfulfilled at work can make up for it through hobbies and activities that satisfy the needs not being met on the job (p. 145).

Career is a construct consisting of multiple roles (Bolles, 1988; Hesser, 1984; Liptak, 2007, 2008a; McDaniels & Hesser, 1983; Super, 1980, 1984). Super (1984) suggests that life involves playing many roles, including that of child, student, worker, leisurite, citizen, spouse, parent, homemaker, and pensioner. He adds that a career can be viewed as “the sequence and combination of roles played by a

person in the course of a lifetime” (p. 75). Hesser (1984), building on Super’s (1980) Life Span, Life Space theory of career development, developed the Life-Style Grid (LSG), which “integrated the Adult Leisure Role with other career roles while accounting for career role complexity” (p. 135). Liptak (2000) later developed the Leisure Theory of Career Counseling, which suggested that leisure can be as important as work in the development of a career.

Boland and Edwards (1981, p. 107) believe that “the demands of our changing society will render career counseling inadequate and ineffective if it continues as a separate and distinct field” and have developed a career counseling model that synthesizes work and leisure. Their model consists of four overlapping and interlocking steps:

- Identifying client needs (answers the question “why?”)
- Identifying activities to meet needs (answers the question “what?”)
- Differentiating work and leisure activities (answers the question “which?”)
- Facilitating client participation in selected activities (answers the question “where?”)

Many developmental approaches have also integrated the aspect of leisure when discussing the concept of career (Bolles, 1988; Lerner, 1982; McDaniels, 1982; Sonnenfeld & Kotter, 1982; Super, 1980).

McDaniels (1982) has proposed a model for life planning throughout the life span and has suggested many ways of integrating leisure into the life-planning process. The methods by which leisure can be integrated into each of the life stages include these:

- Intellectual development, creative activities, physical development, and volunteerism in childhood
- Extracurricular activities, peer influence, and family influence in adolescence
- Campus activities, intercollegiate athletics, volunteerism, academic-related clubs, and work-related activities in young adulthood
- Family leisure activities and work-related activities in adulthood
- Continuing education, vocational and technical education, volunteerism, and self-development activities at mid-life
- Travel, education, hobbies, volunteerism, and clubs during retirement

Blocher and Siegal (1981) have proposed a cognitive developmental theory of leisure and work. Their approach stresses that human beings are purposive and actively reach out to organize information about work and leisure opportunities in their environment.

If we can understand how people process information about, and make choices with regard to, that portion of their lives that is most amenable to individual control, we may learn more about their ways of construing those more externally constrained aspects of their experience that we call work (p. 33).

In an attempt to formulate a unified career counseling approach, McDaniels (1989) has suggested seven principles aimed at bringing about a broad, all-encompassing view of career development across the life span. According to McDaniels, career counselors should

- Stress both continuity and change in future occupations
- Emphasize the best and broadest preparation possible, along with marketable skills
- Be aware of all the educational and occupational options/information systems

- Encourage development of leisure and work interests and abilities
- Bring out a life span approach to Career = Work + Leisure (C = W + L)
- Emphasize life satisfaction from a broad range of both work and leisure options
- Help people find, prepare for, and engage in work and leisure options they really like

Enhancing Career Options through Leisure

Super (1984) contends that for the unemployed, “Leisure may be seen as a substitute for work in an economy which does not provide employment for all its potential workers” (p. 75). He adds, “The leisure pursuit, the avocationally developed talent of today, may prove to be crucial vocationally tomorrow” (1986, p. 113). Super (1986) also suggests that as a result of recent research into the work/leisure connection, more is known about education–work/leisure relationships and how each contributes to the other. He adds:

Knowledge of and interest in leisure will be put to work more than ever as leisure becomes more generally available, its importance in human development and adjustment are realized, resources for fostering its effective use are improved, and guidance and counseling personnel equip themselves to provide help in its use (p. 356).

McDaniels (1989), in a chapter of *The Changing Workplace* titled “Helping People Put Their Leisure to Work,” focused on the idea that an individual’s personal development is affected by the leisure activities he or she engages in and that “taking part in leisure-time activities may also help us to discover useful and productive occupations” (p. 195). He then described how leisure involvement and skills development are translated into life satisfactions in part-time or full-time work. He suggests that the person

- Becomes aware of a leisure activity
- Explores the activity
- Prepares for greater involvement in it
- Gains satisfaction from it
- Puts the leisure activity to work (p. 200)

McDaniels (1989) also suggests some methods for career counselors to use to encourage people to become more aware of and to explore options for putting their leisure to work. His suggestions include

- Encouraging clients to talk to people who have put their leisure to work
- Emphasizing the education-for-leisure options open to every person, such as traditional courses, vocational-technical education, adult education programs, and correspondence study
- Helping people use community resources such as clubs and community agencies

In his 1989 book *Pathways to Leisure*, Kimeldorf provides many excellent leisure-search resources for clients to use in examining their own leisure and in putting their leisure into actions for pleasure and profit. He suggests that “many of us discover new skills or talents during leisure hours and these talents sometimes lead to a new job” (p. 11). Additionally, Kimeldorf has developed many tools to assist people in exploring leisure skills and talents, including the Work/Leisure Research Project and the *Leisure Activities Awareness Survey*. Similarly, many career assessments include an assessment of leisure-time interests. Both the *Strong Interest Inventory*, first developed by E. K. Strong in 1927 and still used by career counselors today, and the *Self-Directed Search* (Holland, 2000) have a leisure assessment and evaluation component. Liptak (2008b) later developed the *Transition-to-Work Inventory* to help people

assess their leisure interests and put those interests to work in part-time and full-time employment, home-based businesses, and other entrepreneurial options.

The Need for Work/Leisure Interest Inventories

Seligman (1980, p. 100) suggests, “Interest inventories are probably the most helpful sort of instrument to use in career counseling.” She adds that they are the least threatening, have the most relevance for career planning, and are easily understood and accepted by most clients.

Campbell and Hansen (1981) add that interest inventories provide clients with greater self-understanding, which enables them to make better decisions. These inventories also provide counselors with comparable information about and strategies for helping each individual being counseled.

Anastasi (1982) notes that recently revised or developed interest inventories reflect changes occurring in the field of career counseling, including an increasing emphasis on self-exploration, an emphasis on the expansion of available career options, and utilization of items that reflect sex-fairness.

Loesch and Wheeler (1982) contend that instruments intended to assess leisure interests are by far the most common type cited in the professional leisure counseling literature. Three main reasons for this predominance are listed.

- Interest inventories are used extensively in vocational counseling, and it is logical to parallel this usage.
- Professionals often erroneously assume that the face validities of leisure interest assessment instruments are sufficient to merit their use.
- An “interest” in an activity is assumed to imply a “motivation” to participate in the activity.

Despite the utility of career and leisure interest inventories, few such inventories have been developed. In developing the Life Interest Inventory, Frisbie (1982) reviewed the literature concerning leisure and career interest inventories and found that, with the exception of the Guilford-Shneideman-Zimmerman Interest Survey (G-S-Z) (Guilford, Shneideman, Zimmerman, 1948), all career interest inventories were designed with only work in mind. In addition, he found that “all available leisure inventories, by design, exclude reference to work, therefore, they are not the inventory of choice for the initial career counseling” (p. 49).

Chapter 2: Theoretical Basis for the *CEI*

Based on Two Theoretical Constructs

The *CEI* was based on two theoretical constructs that had never been utilized as the basis for an interest inventory. The two constructs were Super's (1980) Life Span, Life Space theory of career development and McDaniels's (1984) concept of Career Equals Work Plus Leisure ($C = W + L$). The life span aspect of Super's (1980) theory was instrumental in the construction of a unique developmental item response format. According to Super (1984, p. 192), "It is important to obtain three time *perspectives*: the past from which one has come, the present in which one currently functions, and the future toward which one is moving."

Drawing from this perspective, the *CEI* utilizes a response format comprised of **P** for past interest, **C** for current interest, and **F** for interest anticipated for the future. This differs from the traditional response format of **L** for like, **I** for indifferent, and **D** for dislike.

The life span aspect of Super's (1980) theory was also utilized in the development of the *CEI*'s Career Exploration Guide (renamed the Work, Leisure, and Learning Activities Guide when the *CEI* was published by JIST Works). This is a section of the inventory that enables individuals to explore their interests in occupations; educational courses; and leisure for self, family, and community service. Similarly, McDaniels's (1984) concept of Career Equals Work Plus Leisure ($C = W + L$) forms the basis for inventorying both work and leisure interests. The Career Planning Guide, based on McDaniels's (1977) Leisure Development Inventory, was included in the *CEI* to assist subjects in exploring how their work and leisure interests formed and combined over their life span. The Career Planning Guide was modified and renamed the Work, Leisure, and Learning Activities Worksheet when the *CEI* was published by JIST Works.

Because all existing classification systems were primarily designed for matching clients with the world of work, I felt that using an existing classification system was inappropriate. Thus, the *CEI* was not developed to simply match clients and jobs by utilizing one of the existing classification systems (cf., Gati, 1979; Holland, 1973). Rather, the *CEI* was developed to assist clients in the exploration of both work and leisure interests from the past, in the present, and for the future.

A New Theory of Career Development

As an outgrowth of my work with the *CEI*, I developed the Leisure Theory of Career Development (LTCD) (Liptak, 2000), which drew on Maslow's (1968) Theory of Motivation, on principles in the transpersonal psychology literature, and on Bordin's (1990) Psychodynamic Model of Career Choice. Bordin was one of the first career counselors to emphasize play in his theory of career selection. For Bordin, play is an important activity that brings out joy and satisfaction. Bordin believed that play, or the joy that comes from play, is highly sought after by all people at most times during their lives. Whenever possible, according to Bordin, people will seek to get joy from their work. It is this desire for satisfaction in work that leads people to select an occupation.

Similarly, the Leisure Theory of Career Development states that the focus of career counseling should be on both the client's leisure activities and his or her work experiences. This will help the client achieve life satisfaction. Specifically, it addresses the question of why people express preference for different occupational and leisure activities at different points in their lives and the question of how their decisions about work and leisure are related to their life satisfaction.

Following are principles from the Leisure Theory of Career Development (Liptak, 2000, pp. 123–129).

Leisure and Career Development

Career is comprised of the interaction and culmination of work and leisure roles. The work role accounts for all paid employment. The leisure role is comprised of all other activities, including recreational involvement, hobbies, learning, volunteering, self-maintenance, and family activities.

The Leisure Theory of Career Development suggests that career counselors should expand their notion of career to include the close synthesis between work and leisure. The study of the effects of leisure on work can be traced back to Super's (1940) study of the psychology of avocations. In his study, model railroaders, amateur photographers, and members of amateur symphony orchestras were found to be engaging in their hobbies in one of three ways: (1) as extensions of their occupations, (2) as compensation for their occupations, or (3) as unrelated to their occupations.

As changes take place in society and the world of work, career counselors have recognized the inclusion of leisure as an integral component of a career and have suggested that career counseling be expanded to include all aspects of one's life. Miller (1999) also cites literature calling for a redefinition of career (cf. Mirvis & Hall, 1994). She states, "Evolving definitions encompass elements beyond work experience" (p. 9). Thus, career counselors need to be more aware of leisure and the effect it has on a client's career.

All people engage in leisure activities because these activities allow them to be interactive, spontaneous, creative, and playful. The types of leisure activities in which people engage, the amount of time spent in these activities, and the contexts vary with each life stage.

In early childhood (ages 2–5), people's parents are the major influence in their lives. People develop a capacity for play and imagination and develop communication skills. During this stage, people also develop a sense of right and wrong.

In middle childhood (ages 6–12), schooling is the major influence. During this period, people learn to relate to social peers at school and after-school activities and develop close friendships. Physical, intellectual, and psychological dimensions and capabilities also grow during this period. Eye-hand coordination increases and manual dexterity is developed. During this state, people begin to learn about their interests and abilities through leisure. People also develop new motor skills and cognitive abilities.

In adolescence (ages 13–18), people continue to explore and become aware of new leisure activities. Kleibert, Larson, and Csikszentmihalyi (1986) found that leisure activities during this period help people acquire the necessary skills to handle the demands of adult leisure options. School continues to be the primary context for leisure experiences. However, the family provides an opportunity to explore activities not experienced in school. People are involved in both team and individual leisure experiences. All of these experiences allow people to refine their likes and dislikes. During this stage, people also learn how to relate leisure activities to occupations and postsecondary school course work.

In young adulthood (ages 19–25), people have more freedom to choose how to spend their leisure time. During this period, education becomes a leisure choice, not a requirement. This stage is a time for taking risks and exploring a variety of options related to leisure activities. The work

setting or postsecondary school is now the major influence in people's lives. For those seeking additional education, leisure activities most likely evolve around the classroom setting, while those seeking employment may use leisure to learn additional vocational skills or try out new vocations.

In adulthood (ages 26–45), most people work part- or full-time. People's jobs often dictate the types of leisure experiences in which they engage. For example, a computer programmer may spend time reading about new computer programs. If a person gets married and starts a family, his or her leisure activities may revolve around the family.

In midlife (ages 46–65), leisure often replaces work as the major source of life satisfaction. During this period, leisure may bring new meaning to people's lives. People may begin to feel their job is too stressful or dull or is not fulfilling their needs. They may choose to volunteer their services and expertise, using leisure experiences to pass on their knowledge to others. At this stage of life, people also have more time for leisure activities, because any children are typically grown and have already left home. Similarly, they have more time and money to devote to leisure. People also prepare financially and psychologically for retirement and then begin to cut back on work.

In later life (ages 65+), people engage primarily in leisure-time activities. They have a tremendous amount of time now to devote to their leisure interests. Although fewer people are retiring at age 65, many cut back on the number of hours they work, thus increasing the number of leisure hours available to them. Leisure activities can provide alternative uses of time.

People are genetically endowed with and exhibit different interests, abilities, values, and personality characteristics. Although the crystallization of some of these characteristics occurs during work, most of these unique characteristics are crystallized primarily through participation in leisure activities.

In my study of the interaction between work and leisure over a person's life span (cf. Liptak, 1991b, 1991c, 1992), I found that leisure can actually play a more important role in career development than work. Similarly, Rogers and Sawyers (1988) believe that leisure has a tremendous effect on a person's social, emotional, and cognitive development. Their research indicates that leisure provides people with an opportunity to practice new skills; explore occupations; try out occupations; gain new skills; experience events; unite mind, body, and spirit; transform reality into symbolic representations of the world; consolidate previous learning; experience peak moments; explore problem-solving styles; and develop creative and aesthetic appreciation.

Career and Needs Satisfaction

People are constantly evolving toward self-actualization and self-transcendence. During this evolution, people are motivated to satisfy or fulfill their needs through work and leisure.

Maslow (1971) suggests that people have inner drives or needs that motivate them. He identified a basic needs structure composed of five levels of needs—physiological, safety and security, belongingness and love, esteem, and self-actualization—that are arranged in a hierarchy proceeding from lower-level needs to higher-level needs. People are motivated to proceed through each of these needs one at a time. This progression is the growth process for an individual's life.

A person's ability to fulfill his or her needs at work, and thus experience increased job satisfaction, depends on the quality of the match between the individual's characteristics and the characteristics of the work.

The more people are able to fulfill their needs at work, the less they need to rely on leisure-time activities for life satisfaction. For example, a person who loves being a secretary is able not only to make enough money to fulfill physiological and security needs but also belongingness, esteem, and possibly self-actualization needs.

Career and Life Satisfaction

Life satisfaction is the goal of all people. Life satisfaction is composed of work satisfaction and leisure satisfaction.

Pearson (1998) recently completed a study to determine whether job satisfaction and leisure satisfaction were predictors of psychological health. She found that job satisfaction and leisure satisfaction both had high correlations with psychological health, but low correlations with each other. Consequently, she contended, "The combination of job satisfaction and leisure satisfaction was a stronger predictor of psychological health than job satisfaction alone" (pp. 421–422). Thus, participants of the study who were more satisfied in both work and leisure tended to have greater levels of psychological health. Leisure, therefore, "adds something to psychological health not accounted for by one's job" (p. 423).

From this study, support was found for the Leisure Compensation Theory (Staines, 1980), which suggests that people who are dissatisfied at work can compensate for this dissatisfaction through leisure experiences that satisfy the needs not being met on the job. Pearson (1988) concludes that career counselors are often compelled to help a client find a more satisfying job or occupation rather than to help the client find more satisfying leisure activities. However, she states, for some clients the cost of making a job change is too great, and changes in leisure are often more feasible. "Accordingly, instead of thinking narrowly in terms of increasing job satisfaction, the career counselor might be more successful in improving a client's well-being by encouraging his participation in more fulfilling leisure activities" (p. 423).

Because not all people are able to satisfy their needs at work, leisure often becomes the vehicle for attaining life satisfaction. The more a person is unable to satisfy needs at work, the more he or she must rely on leisure-time activities for life satisfaction.

Many career development theorists (i.e., Dawis, England, & Lofquist, 1964; Dawis, 1992; Dawis & Lofquist, 1984; Hoppock, 1976) have proposed the notion that occupations are chosen to meet needs. I (1998) believe this to a certain extent, but acknowledge that not all clients are able to meet their needs through the work they do. For example, an individual may have to take a job as a secretary to feed the family but only be able to meet his or her physiological needs at this job. Career counselors too often assume that all people want to or are able to meet all of their needs at work. Many clients will be able to satisfy their needs through leisure-time activities. The career counselor must have a working knowledge of leisure counseling techniques to provide this assistance (Liptak, 1991c).

Career Decision-Making

There is a direct correlation between a person's ability to satisfy needs and his or her life satisfaction. Therefore, a person's career can be seen as a series of decisions through which he

or she strives to identify work and leisure activities in which he or she can find joy and satisfy needs.

The desired outcome of career counseling, using the LTCD, is the greater realization of a client's potential as a human being. Maslow (1968) suggested that the lack of attainment of lower-level needs can motivate people to correct their situation (deficiency motivation). On the other hand, humans are also motivated by the potentialities of growth itself or the incentive to make actual what they feel is latent within them (growth motivation).

Therefore, much career counseling is geared toward the level of need deficiency the client is experiencing. Career counselors may be concerned with helping the client fulfill his or her deficiency motivation through such activities as finding a job, increasing self-esteem, or returning to school. On the other hand, career counselors often work with clients to fulfill their growth motivation. Growth motivation goals include spiritual growth, self-actualization, and transcendence. These goals are accomplished through the realization of one's true self and one's purpose in life. The objective of growth motivation is to help the client develop a rich and meaningful life.

Due to the complexity and ambiguity of the career decision-making process, career choice is often as much of an affective right-brain process as it is a cognitive left-brain process.

Career choice is not always a logical, linear process. However, career counseling has always relied on a systematic decision-making process. In this process, the decision maker identifies the decision to be made, gathers information, identifies appropriate options, and eliminates options until there is one best option available. Rather than relying on this traditional "left-brain" model, the LTCD also recognizes the importance of the intuitive "right-brain" methods for arriving at career decisions. A person's intuitive mind is nonverbal and operates through pictures, symbols, inspirations, and metaphors. Intuition is "a type of knowing that comprehends whole truths rather than fragments of truth" (Small, 1986, p. 6). Intuitive knowledge takes both outer- and inner-world experience into consideration. Small (1986) adds, "Intuitive knowledge is a combination of logic and inner knowing based on experience, a synthesis of the left brain and the right" (p. 6).

Left-brain exploration activities focus on assessment and on gathering information about the world of work through career exploration, vocational tryout, and use of technology to retrieve occupational information. Right-brain career counseling techniques are often useful in helping people achieve their transcendence needs. Some of these techniques include meditation of "Who am I?" (Novak, 1989), creative visualization (Gawain, 1978), the use of intuition (Day, 1996), handwriting analysis, past-life regression, dream work, fantasizing, and other-hand writing.

Fusing Work and Leisure

Job satisfaction, achievement, and stability in an occupation depend on how successful a person is at finding work which allows him or her to be spontaneous and creative by fusing work and leisure activities.

I believe that the ultimate goal of career counseling is to facilitate the client's fusion of work and leisure. I said that the fusion of work and leisure is a way of helping people attain self-actualization and life satisfaction. People who are successful in fusing their work and leisure activities find a sense of playfulness at work, experience many peak moments in doing their work, feel a sense of spontaneity and creativity, and are motivated to master their daily work activities.

Some people are fortunate enough to find satisfaction at work for all their needs, from physiological to self-actualization. For these people, work is a source of tremendous life satisfaction. They seem to be unable to easily separate work and leisure-time activities. Work, in these cases, provides a forum where employees can be spontaneous, creative, and playful. One example of this would be an individual who teaches elementary school during the day and then tutors, takes classes to further his or her education, and develops curricular materials in the evening. This person receives tremendous life satisfaction from teaching. His or her work and leisure-time activities are fused. Athletes are another group of individuals who often fuse work and leisure activities and who experience real-life satisfaction. All people are able to experience this fusion.

Maslow (1968) also believed that work and play can be transcended into one. He called these moments peak experiences. Similarly, Csikszentmihalyi (1990) wrote about flow, or how we find happiness. He believes that happiness is a side effect and not achieved when directly pursued. He refers to this flow as the psychology of optimal experience. These are times when people forget about the passage of time because they are completely absorbed in what they are doing. He concludes that the more time a person spends in this absorbed state, the happier he or she is. In order to achieve this flow, he believes that people must have a goal or challenge, total involvement or immersion, and concentration without self-consciousness.

The *CEI* in Life and Career Balance

Career counselors continue to value leisure and other life roles as important elements in career development. The integration of leisure and learning with work, when establishing a balanced career, is becoming more important due to the number of people choosing to work extended hours and the number of people being forced to maintain a high level of work hours (a high level of productivity) to keep their jobs.

Liptak (2012b) suggests that a career is actually the culmination of all the work, leisure, and learning activities a person engages in to grow. He asserts that people who make time for leisure interests are able to achieve a greater work-life balance and find greater life and career success and satisfaction. Zelinski (2003) echoes these sentiments and suggests that people who balance work and leisure will experience the following benefits:

- A higher quality of life
- Personal growth
- Improved health
- Higher self-esteem
- Less stress
- Excitement and adventure
- A sense of self-worth

Liptak (2008a) theorizes that people have trouble balancing work, leisure, and learning in part because the pressures of work have intensified. For people to live a mostly stress-free life, they must integrate all three roles to express a total pattern of self-development.

Liptak (2011) suggests that although leisure activities are often engaged in for fun and relaxation, the skills gained from these activities can easily be transferred to a variety of occupations. Liptak (2014) recommends that people try to fuse work and leisure so they can have more peak experiences. Fusion involves identifying activities you can pursue with a childlike resolve until

you are able to fuse work and leisure into one spiritual mission. He contends that “when you are able to achieve this fusion, there is little time or energy left for the problems of daily life” (p. 123).

According to Zunker (2006), career counselors need to explore the significance of life roles and the influence one role has on others. Counselors need to examine each life role and integrate them into the career-planning and decision-making processes. He expresses that “central to our concerns as career counselors is a balance of life roles that gives clients the freedom for self-expression to meet their needs” (p. 159). Zunker concludes that leisure and learning roles should be assessed by career counselors as a significant method for complementing other life roles. Liptak (2012a) also found that as entrepreneurship opportunities rise, more people starting small businesses find the need to balance their work, leisure, and learning time. He believes engaging in nonbusiness-related activities is important for entrepreneurs, suggesting that “finding more time for fun and relaxation can play a huge part in how you manage anxiety and stress” (p. 199).

Peterson and Gonzalez (2005) remind us that an alternative for satisfying self-expressive needs and meaning through work is satisfying those needs through leisure, learning, and avocational activities. Capuzzi and Stauffer (2012) believe that career counselors need to address clients using a holistic perspective that looks at client emotional factors, family interactions, social well-being, and the relationship between various life roles including work, leisure, and learning. Similarly, Leutenberg and Liptak (2010) feel that balancing work with other life roles is one of the five most essential work skills for the twenty-first century. They contend that to be successful, people needed to explore and examine the importance of leisure and other life roles in living a well-balanced life.

Chapter 3: Instrument Development and Construction

Development of the Career Exploration Inventory

The *Career Exploration Inventory* is the result of a developmental process described in Table 3.1. The first phase of the process was an examination of the needs in career development, a review of the career development literature, and a review of the existing work and leisure interest inventories. The review revealed two major needs in career development literature:

- The need for an interest inventory that could be used in career counseling, in leisure counseling, or in a holistic approach
- The need for an interest inventory that measures developmental, continuing interests over the life span

Career counselors are increasingly viewing the concept of career as the combination and interaction of work and leisure throughout the life span, with leisure being equally as important as work. For the most part, vocational interest inventories have neglected the leisure component, while leisure inventories have neglected the vocational component. The Life Interest Inventory (Frisbie, 1982) was the only inventory in the literature that assessed both work and leisure interests. However, the literature review revealed no instrument that measured developmental, continuing interests over the life span. Since career counselors are increasingly recognizing career as a developmental process that takes place over the life span, a major need identified from this search was for an interest inventory that measures continuing, developmental work and leisure interests—past, present, and future.

The next phase of the process was the actual development of the interest inventory. Important questions were addressed concerning the inventory's format, content, scoring, and norming procedures. In this phase, 12 items which were most representative of work and leisure were selected for predetermined interest categories. Independent judges verified each of the items for content, form, and placement into interest categories. Then, the items were given to a random population (N = 30) and subjected to a coefficient alpha correlational analysis.

The third phase of the process consisted of a series of three pilot studies to gather qualitative data about the inventory's format, clarity, and utility. Subjects (N = 15) participating in the pilot studies were randomly selected from Virginia Polytechnic Institute and State University and included graduate students in the Counselor Education Department, faculty, and staff. Subjects were asked to complete the *CEI* and a Client Observation Sheet. Additionally, I interviewed each of the subjects to obtain feedback and suggestions. This information was used in determining the final form of the instrument.

The fourth phase of the process consisted of field-testing the instrument to gather quantitative data about its validity and reliability. The final form of the *CEI* was given to 104 unemployed and underemployed adults participating in the Job Training Partnership Act program sponsored by the Private Industry Council of Westmoreland/Fayette, Inc., in southwestern Pennsylvania, and to 106 employees who had attended program activities offered by the Employee Career Development Program at Virginia Polytechnic Institute and State University. A sample of the original group (N = 55) were retested approximately three months after the original field test to determine the stability of the scales.

In the fifth and final phase, all validity and reliability information was analyzed to determine the effectiveness of the *CEI*. This information was subsequently published as my dissertation, titled “The Development of a Career Exploration Inventory.”

Table 3.1: Overview of the Research Process

Phase 1: September 1988–February 1989

- Review of the career development literature
- Review of existing work and leisure inventories

Phase 2: February 1989–March 1989

- Preliminary decisions made about the inventory’s format, content, and scoring
- Selection of a general pool of 700 items
- Use of five independent judges to verify content, form, and placement of items
- Internal consistencies determined using a random sample (N = 30)
- Construction of the 15 final interest categories

Phase 3: April 1989

- Preliminary draft of the *CEI*
- Series of three pilot studies with graduate students, staff, and faculty (N = 15)
- Interviews with each subject following completion of Client Observation Sheet
- Completion of the final form of the *CEI*

Phase 4: May 1989–August 1989

- Field testing of the *CEI* (N = 210)
- Interviews with various subjects who completed the *CEI* (N = 45)
- Test-retest reliability determined (N = 55)

Phase 5: August 1989–January 1990

- Writing of the results

Construction of the Career Exploration Inventory

According to Seligman (1980), two methods have been widely used to develop interest inventories. One method, such as that used for the development of the SVIB/SCII, compares the interests of the test-taker with the interests of individuals engaged in various occupations. This method is based on the findings that people in an occupational group have similar interests and are drawn to each other and to the occupation because of these interests (Hogan, Hall, & Blank, 1971).

The other method, such as that used for the development of the Kuder Occupational Interest Survey, is based on activity-similarity rather than people-similarity and assesses the relationship between an individual's preferred or disliked activities and the activities involved in the performance of occupations.

Cirino-Gerena (1970), in reviewing the literature for developing an inventory, found that interest inventories were developed in many different ways. The methodological decisions the test constructor must make include the types of items to use, the item format, the type of response format to use, the use of occupational or homogeneous interest scales, scoring procedures, norming procedures, and controlling for sex bias. Methodological decisions made in the construction of the *CEI* are described on the following pages.

Inventory Format

The same format was utilized for all the items chosen for the *Career Exploration Inventory*. Some test constructors have argued that the use of several different item types adds interest to a test because of its variety (Campbell & Hansen, 1981). However, Thorndike (1971) contends that well-constructed items in one form usually present no problem of maintaining interest for the test-taker. On the whole, arguments for use of as few item types as possible, and preferably only one item type, probably outweigh arguments for a variety of items.

Some test developers prefer to use a forced-choice item response format (Hubert, 1969; Kuder, 1976; Lunneborg, 1981), while others prefer a free-response item format (D'Costa et al., 1970; Frisbie, 1982; Holland, 2000). However, both of these formats are based on structural theories of career development that attempt to measure the counsees' interests at the time they take the inventory. These formats make no formal, structured effort to inventory past interests or interests anticipated for the future.

Since the *Career Exploration Inventory* is developmental in nature and is based on Super's (1980) Life Span, Life Space theory of career development, the response format is a free-response format in the form of **P** for past interest, **C** for current interest, and **F** for interest anticipated for the future. This format allows the counselee to identify sustained interest, not simply interest at a particular point in time. The counselee has the option of circling one, two, or all three choices for each item. According to Anastasi (1982), the opportunity to register dislike for an activity allows for examination and discussion of rejected items. Therefore, if the counselee did not like the item in the past, does not like it now, and does not anticipate liking it in the future, no items need be circled.

Item Selection and Category Verification

A pool of more than 700 items was generated from a review of existing career and leisure interest inventories. From this item pool, 204 items were chosen for the preliminary form of the *CEI*. These items included those which referred to both work and leisure activities. As suggested

earlier, items which referred exclusively to work (for example, “Work in a garage” or “Work with animals”) or leisure (for example, “Volunteer in a hospital” or “Knit in your spare time”) were eliminated or reworded. Specific categories of items that were selected for the preliminary form of the *CEI* included these:

- Activity items—items related to the performance of specific activities, such as “Planting a garden”
- Education items—items related to learning, reading, and/or studying, such as “Taking a journalism course”

Research suggests that the use of qualified judges can be reliable and valid for scale construction (Burisch, 1978; Holden & Jackson, 1979; Jackson, 1975). Therefore, five independent judges with expertise in career and leisure counseling were asked to assist in the development of reliable and valid interest categories. These qualified judges verified the content, form, and placement of the items selected; confirmed specific homogeneous interest categories; and eliminated redundant interest categories.

All the judges had obtained or were in the process of obtaining doctoral degrees and all were currently working or had previously worked in career and/or leisure counseling positions. Judge 1 was a counseling psychologist working in a university counseling center. Judge 2 was a career counselor working in a university counseling center. Judge 3 was a training and development specialist who worked in an Employee Career Development Program. Judge 4 was a doctoral candidate in Counselor Education and worked as a counselor in a Bible college. Judge 5 was an adjunct professor who also worked with the state career information delivery system.

I made an appointment with each judge to describe the study and provide general background information about the inventory. Each judge was given a list of 204 interest items which were arbitrarily clustered into 17 groups. Judges were to verify each item’s form and content, verify the placement of each item by moving items to appropriate clusters, eliminate or combine redundant clusters, and name each cluster with a word or two describing the category that the items represent. Before this procedure was chosen, it and another procedure were tested on two people. The other procedure involved writing the names of the interest items on index cards and having the two people sort them into appropriate clusters. The procedure that was chosen was considered to be easier, more effective, and more reliable than the other procedure.

Specific instructions were typed and included with the 204 interest items. The instructions were as follows:

In an attempt to develop an interest inventory that measures work and leisure interest, the following 204 items have been arbitrarily grouped into 17 clusters with 12 items in each of the clusters. The clusters and items were deliberately chosen because of their applicability to both work and leisure activities. The specific instructions are to: (1) *verify* placement of each item and feel free to move items from one cluster to another by writing the number of the new cluster to the left of the item; (2) *verify* the content and form of each item and feel free to rewrite or reword any item; (3) *eliminate* or *combine* any clusters that are redundant or unnecessary. If you eliminate a cluster, place an **X** over the items in that cluster, and if

you combine two clusters, write **combined with #__**; (4) *name* each cluster with one or two words that best describe the theme of the items within that cluster; and (5) *list* any additional items you feel are appropriate for the 17 clusters.

Judges were allowed to take the items with them to sort. The instructions allotted space for the judges to suggest items, move items to other categories, and make comments. Definite patterns emerged from the judges' comments and suggestions. Three of the five judges recommended that the "Social Service" and "Social Research" categories be combined into one category and that the "Sports" and "Travel" categories be combined to form a "Physical Performing" category. A few new items were suggested, and some items were reworded. The category labels that were suggested most often by the judges were used in the final form of the inventory. (See additional discussion in Chapter 4.)

The 204 items were then given to a pilot population (N = 30) in Virginia consisting of adult males and females of various ages. The items were then subjected to an internal consistency analysis using the Statview 512+ (1986) statistical package. Most judges were in agreement about the form, content, and categorization of the items. However, items were changed or recategorized upon the recommendation of three of the five judges. This combination of qualitative validation (use of "expert" judges) and quantitative validation (internal consistency analysis) added to the content validity of the *CEI*.

Basic Interest Categories

Career counselors have noted that one important determiner of vocational choice is the individual's perceptions of an occupation within a frame of reference. Knapp, Knapp, and Buttafuoco (1978, p. 14) state, "The classification of occupations into families or clusters of psychologically similar occupations is eminently useful for career development and predictive purposes."

Interest scales are developed using several item selection techniques that result in two basic types of scales (Zytowski, 1973). Normative scales compare the interests of an individual with those of persons in a particular occupation, such as the scales developed by E. K. Strong in 1927. Homogeneous scales, on the other hand, measure general, global, or basic areas of interest. These scales are composed of items that measure a specific interest, such as those developed by G. F. Kuder in 1963.

Many test developers (Cirino-Gerena, 1970; Harmon, 1974; Kuder, 1960) believe that it is best to develop homogeneous scales from an unselected pool of items before developing occupational scales. Cirino-Gerena (1970) noted several advantages in developing homogeneous scales:

- They are more psychologically meaningful because the counselee can identify psychological traits.
- They allow for the representation of the interest domain with relatively few interest scales.
- They focus on general interest areas rather than specific occupations.
- They are not related to any specific age group.
- They help provide insight into the role of the items chosen and the dimensions of vocational interest.
- They can be quickly scored.

These advantages, combined with the fact that the *Career Exploration Inventory* measures leisure interests as well as work interests, built a strong case for the use of homogeneous scales.

Additionally, Frisbie (1982, p. 54) adds, "Occupational (or empirical) scales, aside from being very difficult and expensive to establish, are not really the type of scales to initiate awareness of basic interests in a beginning counseling situation." Since the primary purpose of my study was to increase a client's awareness of work and leisure interests, homogeneous scales were developed.

As stated earlier, five independent judges were asked to name each cluster of items based on similarities between the test items in the cluster. The test constructor selected the name for each interest category based on suggestions from the judges. Chapter 4 will provide additional information concerning the label names recommended by the judges. The original 15 interest categories are described in greater detail in the following section.

Interest Categories in the First Edition of the CEI

The interest categories used in the first edition of the *CEI* are listed and defined below.

- **Mechanical:** Operating machines for mass production and using tools to build and repair things. Specific work activities might include machinist, welder, and heavy equipment operator; specific leisure activities might include fixing appliances, house construction/repair, and woodworking.

- **Animal Care:** Raising, feeding, grooming, breeding, training, and caring for animals. Specific work activities might include game warden, veterinarian, and pet groomer; specific leisure activities might include riding horses, fishing, and visiting a zoo.
- **Plants:** Cultivating and gathering crops and growing and tending plants. Specific work activities might include horticulturist, park ranger, and landscape gardener; specific leisure activities might include gardening, growing house plants, and visiting state parks.
- **Physical Sciences:** Conducting research and collecting data about the natural world. Specific work activities might include geologist, archaeologist, and physical science teacher; specific leisure activities might include astronomy, visiting science museums, and collecting rocks.
- **Life Sciences:** Investigating, researching, and applying the biological sciences and medicine. Specific work activities might include biologist, physician, and optometrist; specific leisure activities might include studying anatomy, serving as a healthcare volunteer, and training to be an emergency medical technician (EMT).
- **Artistic:** Expressing one's ideas and feelings through art such as dancing and painting. Specific work activities might include commercial artist, graphic designer, and musician; specific leisure activities might include playing a musical instrument, sculpting, and doing needlework.
- **Literary Arts:** Expressing one's ideas and feelings through the creative use of words. Specific work activities might include technical writer, editorial assistant, and columnist; specific leisure activities might include writing short stories, reading, and writing poetry.
- **Social Service:** Helping people with physical, vocational, spiritual, and psychological concerns. Specific work activities might include social worker, psychologist, and rehabilitation counselor; specific leisure activities might include belonging to church groups, serving as a mental health volunteer, and visiting friends and family.
- **Physical Performing:** Using physical skills in athletics, sports, travel, and adventure. Specific work activities might include physical education teacher, sports physiologist, and health club worker; specific leisure activities might include coaching amateur sports, jogging, and swimming.
- **Personal Service:** Providing a variety of services to people, usually on a one-to-one basis. Specific work activities might include cosmetologist, chauffeur, and counter attendant; specific leisure activities might include baby-sitting, cake decorating, and serving as a Meals-on-Wheels volunteer.
- **Persuading/Influencing:** Influencing others, using publicity or powers of persuasion. Specific work activities might include real estate agent, public relations specialist, and sales clerk; specific leisure activities might include fundraising, attending political conventions, and being master of ceremonies.
- **Protecting:** Enforcing laws, regulations, and policies to protect people and property. Specific work activities might include fire fighter, security guard, and corrections officer; specific leisure activities might include organizing neighborhood watch groups, serving as a volunteer fire fighter, and taking self-defense training.
- **Leading:** Directing, supervising, and/or managing others to accomplish a goal. Specific work activities might include office manager, school administrator, and program director; specific leisure activities might include being a school board member, directing plays/musicals, and organizing neighborhood activities and community events.

- **Clerical:** Typing, operating office machines, and performing other activities involving attention to details. Specific work activities might include librarian, medical records clerk, and secretary; specific leisure activities might include being secretary of a club, being a library aide, and researching genealogy.
- **Financial Detail:** Working with numbers and performing statistical analyses. Specific work activities might include accountant, systems analyst, and financial analyst; specific leisure activities might include volunteering to figure income taxes, being a statistician for athletic events, and predicting financial trends.

Interest Categories in the Second Edition of the CEI

When I updated the *CEI*, several of the interest categories were revised, based on feedback from test-takers, changes in the economy and the world of work, and changes in career exploration materials. The second edition of the *CEI* uses the following interest categories. Refer to the *CEI* for definitions of these categories.

- Arts, Entertainment, and Media
- Physical and Life Sciences
- Math, Engineering, and Technology
- Plants and Animals
- Law, Law Enforcement, and Public Safety
- Mechanics, Installers, Repairers, and Construction
- Transportation
- Industrial Production
- Business Detail
- Sales and Marketing
- Recreation, Travel, and Personal Services
- Education and Social Service
- General Management and Support
- Financial Detail
- Medical and Health Services

Interest Areas in the Third, Fourth, and Fifth Editions of the CEI

The third edition of the *CEI* had updated Interest Areas that reflect changes in society and the world of work. In the fourth edition, the structure of the *CEI* interest categories had been changed to include the 16 career clusters used by two popular career information classification systems: the Department of Education and the New Guide for Occupational Exploration (New GOE). The interest categories are also called interest areas to match the terminology of the New GOE. In addition, this revision of the *CEI* uses occupation title and job group information from a system for classifying occupations called the O*NET (Occupational Information Network). Refer to the *CEI* for definitions of these categories.

1. Agriculture and Natural Resources
2. Architecture and Construction
3. Arts and Communication
4. Business and Administration
5. Education and Training

6. Finance and Insurance
7. Government and Public Administration
8. Health Science
9. Hospitality, Tourism, and Recreation
10. Human Service
11. Information Technology
12. Law and Public Safety
13. Manufacturing
14. Retail and Wholesale Sales and Service
15. Scientific Research, Engineering, and Mathematics
16. Transportation, Distribution, and Logistics

Theoretical Structure

Because all existing classification systems were primarily designed for matching clients with the world of work, I felt that using an existing classification system was inappropriate.

“Developmental theories, while not rejecting the matching approaches, treat them as an insufficient basis for career guidance” (Super, 1981, p. 206). Theoretically, the *CEI* is based on Super’s (1980) Life Span, Life Space theory of career development and McDaniels’s (1984) concept of Career Equals Work Plus Leisure ($C = W + L$).

Therefore, the *CEI* does not attempt to simply match clients and jobs by utilizing one of the existing classification systems; rather, it assists clients in the exploration of work and leisure interests from the past, in the present, and for the future.

Sex Bias

Prior studies had agreed that same-sex norms are more useful than other-sex or combined-sex norms in helping clients focus on career alternatives (Diamond, Harmon, & Zytowski, 1976). However, Anastasi (1982, p. 78) suggests, “Current tests are making increasing use of standard scores, which are the most satisfactory type of derived score from most points of view.” In addition, Seligman (1980) says that scores based on opposite-sex norms seem to exaggerate differences and often lead to stereotyped results. This awareness of sex bias in tests has initiated a move away from the use of same-sex norms to the use of raw scores and combined-sex and opposite-sex norms. Therefore, scores in each of the interest categories on the *CEI* was reported in terms of raw scores ranging from 0 to 24.

Sex bias in interest inventories has received considerable attention (Harmon, 1973; Tittle & Zytowski, 1978). It has been defined, within the context of career counseling, as that condition which influences an individual to limit his or her consideration of career options solely on the basis of his or her gender (AMEG Commission Report on Sex Bias in Interest Measurement, 1973). The *CEI* reduces sex bias by following the guidelines suggested in the “National Institute of Education Guidelines for Assessment of Sex Bias and Sex Fairness in Career Interest Inventories” (Diamond, 1975). According to provisions documented in Section I of the guidelines:

- The *CEI* can be used for both males and females.

- The *CEI* provides scores for both males and females. As inventory scales were developed, norm groups were sex-balanced to the greatest extent possible.
- The *CEI* utilizes an item pool that reflects experiences and activities that are equally familiar to both females and males. Items that imply an activity that might be more appropriate for one gender or the other (e.g., policeman, stewardess) were eliminated.
- The *CEI* presents occupational titles in the inventory in gender-neutral terms.
- The *CEI* eliminates the use of the generic “he” or “she” throughout the inventory.

The Office of Civil Rights (1976) later established criteria entitled “Separate sex norms usage must meet OCR regulations,” to help reduce sex bias in testing. The criteria stated that test developers using separate sex norms should be prepared to demonstrate that the format was necessary to eliminate sex bias, that clients should receive scores for both sets of sex norms, and that identical occupational areas and occupational titles should be indicated for each gender.

Norming Procedures

Seligman (1980) states that norms for an inventory may be national or local. She also suggests that “sample groups on which a test has been normed may be described in terms of their age, sex, education, occupation or background” (pp. 66–67). Harmon (1973) recommended that high school, college, and adult norms be developed. For the inventory developed in my study, adult norms were generated from sample populations of 104 unemployed/underemployed adults participating in Job Training Partnership Programs offered by the Private Industry Council of Westmoreland/Fayette, Inc., and 106 adults who previously participated in seminars and workshops sponsored by the Employee Career Development Program at Virginia Tech. This adult population ranged in age from 18 to 65 and was chosen because they had a variety of work and leisure interests.

Pilot Studies

The initial instrument was field tested during the third phase of the study. The *Career Exploration Inventory* was developed; given to “expert” judges for verification of item form, content, and placement; and subjected to a coefficient alpha correlational analysis. A preliminary form of the *CEI* was then field tested. Subjects utilized for this pilot study were graduate students, faculty, and staff (N = 15) at Virginia Tech.

These pilot studies were both qualitative and quantitative in nature. I was primarily concerned with observing and noting reactions to the inventory’s format, the clarity of the directions for administration and scoring, and the usefulness of the guide to work and leisure opportunities. In addition to completing the *CEI*, subjects completed a Client Observation Sheet. This questionnaire provided subjects with an opportunity to critique the instrument and suggest needed changes. I then interviewed each subject before the general reliability and validity of the inventory were estimated.

In general, the subjects reported that the *CEI* was relatively easy to take and to interpret; however, scoring the instrument appeared to be difficult for the majority of subjects. Therefore, the scoring format and instructions, as well as the profile sheet, were changed to reflect the suggestions of the subjects.

The subjects also reported that they had difficulty assimilating and understanding the information they had accumulated from the *CEI* about their work and leisure interests. Therefore, the Career Planning Guide was added to the final version of the *CEI* in order to aid clients in organizing and

exploring their past, present, and future work and leisure interests. The subjects' comments and suggestions from the pilot studies yielded a 120-item developmental interest inventory and career exploration guide that can be self-administered, scored, and interpreted.

Field Testing of the *CEI*

The fourth phase of the study was conducted during the spring semester of the 1988–1989 academic year with two different populations. The first group of subjects (N = 104) consisted of unemployed and underemployed adults participating in the Job Training Partnership Act program offered by the Private Industry Council (PIC) of Westmoreland/Fayette, Inc. PIC is a private, nonprofit organization that receives funds from the federal government to provide career counseling, job placement, and job-search assistance to low-income residents of Fayette and Westmoreland counties in southwestern Pennsylvania.

Permission to administer the *CEI* to the sample of unemployed and underemployed adults was obtained from the vice president of client services at PIC. I spent two days administering the *CEI* to clients at PIC's office in Uniontown, Pennsylvania, and two days administering the *CEI* to clients at the Monesson, Pennsylvania, office. I was also available to provide career counseling for the subjects requesting this service. Additionally, I administered the Client Observation Sheet and interviewed subjects in order to gather additional data about the inventory's effectiveness and usefulness. A discussion of the qualitative findings and two case studies illustrating the use of the *CEI* in career counseling is presented in Chapter 4.

Past participants (N = 106) of the Employee Career Development Program (ECDP) at Virginia Polytechnic Institute and State University comprised the second group of subjects. The ECDP was developed as a joint effort between the Counselor Education Program Area and the Employee Relations/Personnel Office to provide career development services in a comprehensive university setting. The ECDP offers a variety of services, including career planning workshops; career information seminars; individual career counseling; an employee career resource center that utilizes a self-paced, self-managed career planning system; and special topic workshops.

A list of past participants was provided by the Program Area Leader from the Department of Counselor Education and Student Personnel. A copy of the *CEI* and an accompanying cover letter were sent via Virginia Tech campus mail to each past participant. Subjects were asked to complete the inventory and return it to me via campus mail. Of those contacted, 106 past participants responded with completed inventories. Seventeen copies of the *CEI*, with accompanying cover letters, were returned, because the individuals to whom the mail was addressed were no longer employed at Virginia Tech.

As stated earlier, the subjects used in developing norms for the *Career Exploration Inventory* consisted of employees of Virginia Polytechnic Institute and State University and of unemployed and underemployed adults living in southwestern Pennsylvania. The subjects from Pennsylvania were residents of Westmoreland and Fayette counties and were income-eligible to participate in the Job Training Partnership Act program.

The subjects from Virginia Tech were employees who had utilized services provided by the Employee Career Development Program. These populations were chosen to test the validity and reliability of the *CEI* because the participants had a wide variety of work experiences and leisure interests and did need or had needed help with career development. Thus, I felt that the *CEI*

would be a valuable instrument in helping individuals who are involved in career transitions understand how their work and leisure interests interact throughout the life span.

The 104 subjects participating in the Job Training Partnership Act program included 40 females and 64 males ranging in age from 18 to 73 who volunteered to participate in this study. The sample of 106 employees from the ECDP at Virginia Tech included 85 females and 21 males ranging in age from 23 to 62. The total sample of 210 subjects consisted of 85 males and 125 females, ranging in age from 18 to 73.

Data concerning gender and age were obtained from the cover sheet of the interest inventory. Data concerning past, present, and future work and leisure activities for each subject were obtained from the Career Planning Guide. The *CEI* has now been administered to over 1,200 people in the norming process. Construct validity has been correlated with the Myers-Briggs Type Indicator (MBTI), Self-Directed Search (SDS), and Transferable Skills Scale (TSS).

Determining Validity and Reliability of the *CEI*

The Standards for Educational and Psychological Testing (1985) distinguish between three types of validity: content, criterion-related, and construct. Content validity is a central concern during test development and essentially consists of judgment about each item's representativeness of the universe (Anastasi, 1982; Kerlinger, 1973; Standards for Educational and Psychological Testing, 1985). Anastasi (1982) maintains that content validity is built into a test through the choice of appropriate items. Kerlinger (1973) adds that in determining a test's content validity, the test constructor must answer these questions:

- Does the item represent the content or the universe of content of the property being measured?
- If the universe of content has subsets, is the item a member of subset 1, 2, 3, etc. (p. 418)?

In determining content validity, the Committee to Develop Standards for Educational and Psychological Testing (1985) suggests that, given the proposed uses of the test, test development must first adequately specify the universe of content that the test is intended to represent. Similarly, Anastasi (1982) says that content validation essentially involves the systematic examination of the test content to determine whether it covers a representative sample of the behavior domain to be measured.

In order to satisfy the aforementioned criteria, a pool of over 700 items representative of work and leisure was generated from a review of existing career and leisure interest inventories. Some of the career and leisure interest inventories that were reviewed are the Self-Directed Search (Holland, 1978); Strong-Campbell Interest Inventory (Campbell & Hansen, 1981); Kuder General Interest Survey (Kuder, 1976); Harrington-O'Shea Career Decision-Making System (Harrington & O'Shea, 1982); Ohio Vocational Interest Survey (D'Costa, Winefordner, Odgers, & Koons, 1970); Career Assessment Inventory (Johansson & Johansson, 1978); Vocational Interest Inventory (Lunneborg, 1981); Interests Determination, Exploration and Assessment System (Johansson, 1983); Leisure Activities Blank (McKechnie, 1974); Life Interests Inventory (Frisbie, 1982); and the Leisure Development Inventory (McDaniels, 1977).

Researchers differ in their opinions about the most effective method for obtaining content validity. Crano and Brewer (1986) contend that the assessment of content validity continues to be a subjective operation, because no simple statistical measure exists to determine if this validation

requirement is being met. They suggest using a panel of experts to secure adequate coverage of a particular scale. The Standards for Educational and Psychological Testing (1985) maintains that expert professional judgment plays an integral part in developing what is to be measured, including a description of the universe of content, generating or selecting the content sample, and specifying the item format and scoring system. The Standards states

The first task for test developers is to specify adequately the universe of content that a test is intended to represent, given the proposed uses of the test. Another important task is to determine the degree to which the format and response properties of the sample of items or tasks in a test are representative of the universe.

Anastasi (1982) recommends that items be analyzed qualitatively in terms of their content and form and quantitatively in terms of their statistical properties. This methodology was followed in enhancing the content validity of the *Career Exploration Inventory*. Therefore, the items were first given to five independent judges for verification of form, content, and placement into interest categories. The judges were furnished with background information on work and leisure and were asked to make judgments about each of the items in the preliminary form of the *CEI*.

To analyze the items quantitatively, the 12 items for each of the 15 categories (reduced from 17 to 15 by the “expert” judges) were given to a pilot population. Data from the pilot tests provided me with input about the inventory’s format and allowed me to subject each of the 12 items to a test of internal consistency (coefficient alpha) using the Statview 512+ statistical package. The 4 items deleted from each of the 15 categories were the ones that had the lowest correlation with the remaining items in each category. Deletion of these 4 items increased the reliability of the scale. This item analysis reduced the number of items from 12 to 8 for each category. According to Anastasi (1982, p. 192), this practice provides a means of purifying or homogenizing a test, and “item analysis makes it possible to shorten a test and at the same time increase its validity and reliability.” Ary, Jacobs, and Razavieh (1979, p. 233) write, “The more heterogeneous the domain, the lower the inter-item consistency and, conversely, the more homogeneous the domain, the higher the inter-item consistency.”

Kerlinger (1973) suggests that criterion-related validity is measured by comparing a test or scale scores with one or more external variables known to measure the attribute under study. He adds, “Interest is not so much in what is behind test performance as it is in helping to solve practical problems and to make decisions” (p. 419). Anastasi (1982) distinguishes between concurrent criterion-related validity and predictive criterion-related validity by saying, “Concurrent validation is relevant to tests employed for diagnosis of existing status, rather than prediction of future outcomes” (p. 137). Concurrent validity for the *Career Exploration Inventory* was determined by comparing each subject’s top three scores on the interest categories (for work, educational courses, and leisure activities) with their favorite work and leisure activities from the past, present, and future. The percentage of “hits” was then calculated for each of the time frames and also for sustained interest.

Anastasi (1982) contends that construct validity focuses on a broader, more enduring, and more abstract kind of behavioral description requiring the gradual accumulation of information from a variety of sources. The fact that internal consistency correlations will be computed to determine each scale’s homogeneity contributes to the construct validity of the instrument. Many

researchers (Anastasi, 1982; Cronbach, 1970; Kerlinger, 1973) add that correlations between a new test and similar early tests provide evidence that the new test measures approximately the same general domain as other established tests. However, no attempt was made in this study to empirically compare scores on the *CEI* with other interest inventories. For the purposes of this study, construct validity was established by determining the number of times the *CEI* accurately measured sustained interests from the past, in the present, and anticipated for the future. For example, a “hit” was recorded if a person listed gardening as a leisure interest in the past, present, and future.

Cronbach (1970) suggests that there are three parts to construct validation: suggesting what constructs possibly account for test performance, deriving hypotheses from the theory involving the construct, and testing the hypotheses empirically. According to Kerlinger (1973, p. 420), “Construct validity links psychometric notions and practices to theoretical notions.” Since construct validity is primarily concerned with answering the question of what psychological or other property or properties can explain the variance of the test, the test constructor should try to incorporate relevant theory into the construction of the instrument. The theory behind the *Career Exploration Inventory* is that it is important to identify sustained, developmental interests that individuals have engaged in in the past, are currently engaging in, and anticipate engaging in in the future.

Test-retest reliability was obtained by re-administering the *Career Exploration Inventory* to a portion of the original sample approximately three months after the initial testing in order to get an estimate of the stability of the scales.

In summary, the *Career Exploration Inventory* is a brief, exploration-oriented interest inventory that creates an awareness of a variety of work and leisure interests over the life span. The instrument utilizes a developmental, free response item format; is composed of items applicable to both work and leisure interests; develops homogeneous interest scales; uses gender-fair items; and is normed on employed and unemployed/underemployed adults. The instrument was subjected to a series of pilot tests and was field-tested to determine its validity and reliability.

Chapter 4: *Career Exploration Inventory* Development Results

Task Statements

To determine the effectiveness of the *CEI*, the quantitative data that was gleaned from field-testing, the device was compared to the four task statements that guided this study:

- The first task is to select and place items into independent interest categories that are equally appropriate to work and to leisure activities.
- The second task is to establish whether high scores on the interest scales are consistent with the individual's identified work and leisure activities.
- The third task is to determine if continuing work and leisure interests can be inventoried from the past, in the present, and for the future.
- The fourth task is to describe the stability of scores over time from each of the interest scales.

Interest Category Arrangement

The development of the *CEI* placed little emphasis on the development and arrangement of interest scales. The interest categories developed for the first edition of the *CEI* and revised for the second edition were modeled after the 20 interest categories developed by Super and Bowsbey (1979) for use in the Guided Career Exploration course. The 15 interest categories used for the second edition of the *CEI* make no attempt to distinguish between fields and levels of occupations, but rather group items into interest categories to help clients more easily explore how work and leisure interests develop and combine over the life span to form the concept of career. Although the basic interest categories are primarily the same for the third edition of the *CEI*, they have been revised to coincide with the *New Guide for Occupational Exploration* interest areas, which are based on the 16 career clusters defined by the U.S. Department of Education.

Quantitative data concerning the intercorrelation of the scales was obtained from the pilot studies and helped determine scales with the highest correlations. Table 4.1 shows the correlations between the interest categories in the second edition of the *CEI*. The highest correlations occurred between Clerical and Financial Detail (.87) and between Persuading/Influencing and Leading (.81), while the lowest correlations occurred between Mechanical and Personal Service (-.153) and Mechanical and Life Sciences (-.132). Using this information, scales that were most congruent were grouped together on the final form of the *CEI*. For example, Life Sciences is more closely related to Physical Sciences than it is to Mechanical. These correlations were based on the original scales of the *CEI*. The revised scales have not changed significantly to affect the scale intercorrelations.

Table 4.1: Correlation Matrix for the 15 Interest Categories

	Mech	Anim	Pla	Phys	Lsci	Art	Lit	Soc	Phyp	Pers	Pr/In	Pro	Lead	Cle	Fin
Mech	1														
Anim	.159	1													
Pla	.222	.173	1												
Phys	.392	.492	.47	1											
Lsci	-.132*	.489	.25	.533	1										
Art	.1	-.105	.239	.377	.314	1									
Lit	.009	.008	.171	.502	.111	.478	1								
Soc	.023	.031	.049	.434	.346	.377	.583	1							
Phyp	.40	.295	.066	.503	.161	.295	.362	.561	1						
Pers	-.153*	.13	.285	.272	.38	.382	.214	.384	.173	1					
Pr/In	.334	.090	.167	.649	.426	.599	.43	.657	.517	.368	1				
Pro	.393	.207	.334	.554	.336	.434	.258	.355	.343	.583	.617	1			
Lead	.189	.031	.191	.699	.315	.531	.571	.729	.465	.41	.805**	.469	1		
Cle	.051	.091	.167	.338	.222	.504	.38	.437	.263	.782	.516	.461	.58	1	
Fin	.288	.063	.219	.413	.13	.442	.286	.378	.393	.553	.603	.443	.591	.87**	1

Note: For interest category definitions, see Chapter 3.

*lowest correlations

**highest correlations

Summary of the Results

Content Validity

The first task statement guiding this study—to select and place items into independent interest categories that are equally appropriate to work and to leisure activities—deals with the content validity of the instrument.

From the original pool of 700 items, 12 items that were most representative of work and leisure were selected for each of the 17 predetermined interest categories. These items were not specific to either work or leisure. Five independent judges were asked to verify each of the 12 items for content, form, and placement of the items into interest categories. Finally, the judges were asked to determine appropriate labels for the 15 undefined interest categories. Category labels that were suggested most often were used in the final form of the inventory.

The judges felt that the “Social Service” and “Social Research” categories should be combined and that the “Travel” and “Physical Performing” interest categories should be combined. A description of the labels generated by the judges for each of the 15 interest categories is provided in Table 4.2.

Table 4.2: Suggested Interest Category Labels

Category Name #3	Judge #1 Judge #4	Judge #2 Judge #5	Judge
Mechanical Repair	Mechanical Industrial	Mechanical Mechanical	Mechanical
Animal Care Care	Fauna Zoology	Animal Services Animal Care	Animal
Plants	Flora Botanical	Plants Plants	Plants
Physical Sciences Science	Science Science	Physical Scientific	Physical Science
Life Sciences Sciences	Life Sciences Medical	Life Biological	Health Care
Artistic Arts	Artistic Artistic	Artistic Art	Performing
Literary Arts Arts	Literature Journalism	Literary Literary Arts	Creative Writing

Social Service Service	Helping Intervention	Social Service Social Service	Community
Physical Performing Performing	Physical Fitness Sports	Physical Physical Performing	Sports/Recreation
Personal Service Service	Service Domestic	Accommodating Personal Service	Personal
Persuading/Influencing	Leading Propagational	Managing Politics	Persuasion
Protecting	Protecting Emergency	Protecting Safety/Protecting	Protecting
Leading	Leading Leading	Leading Administration	Leadership
Clerical	Clerical Clerical	Secretarial Clerical	Clerical
Financial Detail Detail	Financial Records Finance	Financial Financial Detail	Business/Finance

Note: For original interest category definitions, see Chapter 3.

As part of an ongoing field trial, the *CEI* was administered to a group of over 1,000 adults. Table 4.3 represents the means and standard deviations of the 15 scales, each listed separately for males and for females. Table 4.4 represents the combined gender means and standard deviations for the 15 scales of the *CEI*. Males tended to score high on the Mechanical and Physical Performing scales while scoring low on the Life Sciences and Literary Arts scales. Females scored high on the Social Service and Personal Service scales while scoring low on the Protecting and Physical Sciences scales.

Table 4.3: Means and Standard Deviations for Males and Females

	<i>Men (N = 552)</i>		<i>Women (N = 492)</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Mechanical	12.74	7.10	3.27	4.60
Animal Care	8.13	5.90	7.61	6.60
Plants	9.00	6.10	8.88	6.40
Physical Sciences	4.28	4.40	2.61	3.70
Life Sciences	3.05	3.50	3.43	4.40
Artistic	5.03	4.60	5.96	4.90
Literary Arts	3.65	4.10	6.06	4.80
Social Service	9.31	6.10	10.32	5.90
Physical Performing	10.73	6.00	6.94	6.01
Personal Service	6.19	4.40	10.83	5.70
Persuading/Influencing	6.33	5.12	5.71	4.80
Protecting	4.89	4.40	2.67	3.00
Leading	7.67	6.80	7.34	6.70
Clerical	4.72	5.70	8.00	5.10
Financial Detail	6.05	6.40	6.06	6.10

Table 4.4: Means and Standard Deviations, Combined Gender (N = 1044)

	<i>Mean</i>	<i>SD</i>
Mechanical	8.70	7.70
Animal Care	7.91	6.20
Plants	9.00	6.20
Physical Sciences	3.56	4.20
Life Sciences	3.20	3.90
Artistic	5.43	4.70
Literary Arts	4.68	4.50
Social Service	9.75	6.00
Physical Performing	9.11	6.20
Personal Service	8.17	5.50
Persuading/Influencing	6.07	4.90
Protecting	3.94	4.00
Leading	7.53	6.80
Clerical	6.12	5.50
Financial Detail	6.05	6.20

Norms Developed with the Fourth Edition of the CEI

For the third and fourth editions of the *CEI*, content validity was supported by means and standard deviations for men and women (see Table 4.5). Men scored highest on the Scientific Research, Engineering, and Mathematics ($M = 14.24$), Business and Administration ($M = 12.55$), and Hospitality, Tourism, and Recreation ($M = 10.62$) scales. Men scored lowest on the Government and Public Administration ($M = 2.16$) and Finance and Insurance ($M = 3.76$) scales. Women scored highest on the Human Service ($M = 14.27$), Hospitality, Tourism, and Recreation ($M = 13.09$), and Arts and Communication ($M = 10.37$) scales. They scored lowest on the Finance and Insurance ($M = 2.51$), Information Technology ($M = 2.99$), and Transportation, Distribution, and Logistics ($M = 3.45$) scales. Overall men and women together scored highest on the Hospitality, Tourism, and Recreation ($M = 11.98$) and Human Service ($M = 11.13$) scales. They scored lowest on the Finance and Insurance ($M = 3.07$) and Government and Public Administration ($M = 3.08$) scales (see Table 4.6).

Table 4.5: Means and Standard Deviations for Males and Females Using the CEI Third Edition

	<i>Men (N = 76)</i>		<i>Women (N = 94)</i>
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>
Agriculture and Natural Resources		5.78	3.77
	6.09	4.63	
Architecture and Construction	9.21	5.01	4.51
	5.10		
Arts and Communication	7.30	5.09	10.37
	4.31		
Business and Administration	12.55	5.01	7.43
	4.89		
Education and Training	7.08	4.98	5.62
	4.35		
Finance and Insurance	3.76	5.47	2.51
	2.74		
Government and Public Administration	2.16	2.20	3.83
	4.98		
Health Science	4.34	3.55	8.24
	5.84		
Hospitality, Tourism, and Recreation		10.625	6.68
	13.09	4.41	
Human Service	7.25	4.35	14.27
	4.21		
Information Technology	4.14	4.37	2.99
	3.76		
Law and Public Safety	4.93	3.37	4.31
	3.67		

Manufacturing	5.71	3.61	5.37
	4.56		
Retail and Wholesale Sales and Service	5.26	4.70	5.17
	4.04		
Scientific Research, Engineering, and Mathematics		14.245.63	
	4.37	5.07	
Transportation, Distribution, and Logistics	4.74	4.04	3.45
	3.40		

Table 4.6: Means and Standard Deviations Using CEI Third Edition Combined Gender

Total (N = 170)

	<i>Mean</i>	<i>SD</i>	
Agriculture and Natural Resources		5.95	4.26
Architecture and Construction	6.61	5.57	
Arts and Communication	9.00	4.90	
Business and Administration	9.72	5.55	
Education and Training	6.27	4.69	
Finance and Insurance	3.07	4.22	
Government and Public Administration	3.08	4.06	
Health Science	6.50	5.30	
Hospitality, Tourism, and Recreation		11.98	5.15
Human Service	11.13	5.51	
Information Technology	3.51	4.07	
Law and Public Safety	4.59	3.54	
Manufacturing	5.52	4.15	

Retail and Wholesale Sales and Service	5.21	4.34
Scientific Research, Engineering, and Mathematics	8.78	7.24
Transportation, Distribution, and Logistics	4.02	3.74

College Norms

College norms were developed for the fourth edition of the *CEI*. As can be seen from Table 4.5, women in college tended to show interest in Education and Training (M = 21.52), Human Service (M = 17.29), and Health Science (M = 16.84). All tend to be traditional majors for women. Women in college showed little interest in any of the traditionally male-oriented majors, including Transportation (M = 3.20), Law Enforcement and Public Safety (M = 4.00), and Finance and Insurance (M = 4.36).

Men in college showed the most interest in Business and Administration (M = 19.32), Information Technology (M = 18.80), and Scientific Research, Engineering, and Mathematics (M = 16.24). Men in college showed little interest in Transportation (M = 3.80), Health Science (M = 4.12), and Agriculture and Natural Resources (M = 5.08). College men scored highest in three traditional fields for men.

Table 4.5: Means and Standard Deviations for College Males and Females Using the CEI, Fourth Edition

	Men (N =76)		Women (N =94)
	Mean	SD	Mean
Agriculture and Natural Resources		5.08	4.02
	7.20	5.22	
Architecture and Construction	9.20	6.04	5.80
	5.73		
Arts and Communication	8.84	4.08	12.16
	2.44		
Business and Administration	19.32	4.82	10.84
	6.39		
Education and Training	11.36	5.66	21.52
	5.00		

Finance and Insurance	12.48	2.94	4.36
	5.28		
Government and Public Administration	8.64	6.40	11.64
	6.43		
Health Science	4.12	2.90	16.84
	7.89		
Hospitality, Tourism, and Recreation		5.72	4.09
	11.32	5.14	
Human Service	11.23	5.78	17.29
	7.58		
Information Technology	18.80	5.29	7.12
	4.09		
Law and Public Safety	15.24	3.58	4.00
	3.98		
Manufacturing	6.60	4.51	5.48
	5.01		
Retail and Wholesale Sales and Service	5.60	3.61	14.69
	4.68		
Scientific Research, Engineering, and Mathematics		16.244.11	
	9.36	6.17	
Transportation, Distribution, and Logistics	3.80	3.19	3.20
	3.11		

Junior High School/High School Norms

The scores for eighth and ninth grade students tended to be much lower than the scores for adults and college students completing the *CEI*. This is probably due to their lack of knowledge about themselves and the world of work. This population tends to have the lowest amount of career maturity.

Women in junior/senior high school showed the most interest in Arts and Communication ($M = 11.81$), Health Science ($M = 09.75$), and Scientific Research, Engineering, and Mathematics ($M = 09.06$). Although the two highest scores are in traditional areas for women, the third highest score is in a non-traditional area. Women showed little interest in any of the traditionally male-oriented

majors, including Transportation (M = 01.19), Government and Public Administration (M = 01.69), and Manufacturing (M = 01.94).

Men in junior/senior high school showed the most interest in Business and Administration (M = 09.58), Scientific Research, Engineering, and Mathematics (08.84), and Arts and Communication (M = 08.21). The two highest scores included traditional occupations, while the third had some non-traditional occupations. Men showed little interest in Manufacturing (M = 02.68), Transportation (M = 02.73), and Government and Public Service (M = 3.00).

Table 4.6: Means and Standard Deviations for Junior High School/High School Males and Females Using the CEI Fourth Edition

	Men (N = 19)		Women (N = 16)
	Mean	SD	Mean
Agriculture and Natural Resources		4.21	4.91
	6.81	4.89	
Architecture and Construction	4.74	3.84	4.00
	2.90		
Arts and Communication	8.21	5.50	11.81
	5.29		
Business and Administration	9.58	4.32	8.13
	4.72		
Education and Training	3.32	4.69	5.06
	6.23		
Finance and Insurance	4.32	4.24	5.69
	5.50		
Government and Public Administration	3.00	2.94	1.69
	1.66		
Health Science	6.63	6.26	9.76
	6.66		
Hospitality, Tourism, and Recreation		6.42	5.37
	9.00	6.06	

Human Service	6.47	6.10	6.81
5.14			
Information Technology	5.00	4.52	2.93
2.64			
Law and Public Safety	3.84	3.95	3.13
2.66			
Manufacturing	2.68	2.73	1.93
1.91			
Retail and Wholesale Sales and Service	7.58	4.97	6.75
3.28			
Scientific Research, Engineering, and Mathematics	8.84	5.11	
9.06	7.34		
Transportation, Distribution, and Logistics	2.73	3.18	1.19
1.11			

Table 4.6: Means and Standard Deviations Using CEI Third Edition, Combined Gender

Total (N =35)

	Mean	SD	
Agriculture and Natural Resources		5.40	5.00
Architecture and Construction	4.40	3.41	
Arts and Communication	9.86	5.63	
Business and Administration	8.91	4.50	
Education and Training	4.11	5.44	
Finance and Insurance	4.94	4.83	
Government and Public Administration	2.40	2.50	
Health Science	8.06	6.54	

Hospitality, Tourism, and Recreation		7.60	5.76
Human Service	6.63	5.61	
Information Technology	4.06	3.87	
Law and Public Safety	3.51	3.39	
Manufacturing	2.34	2.39	
Retail and Wholesale Sales and Service	7.20	4.24	
Scientific Research, Engineering, and Mathematics		8.94	6.14
Transportation, Distribution, and Logistics	2.03	2.55	

The 15 categories with 12 items in each category were given to a random population (N = 30) and subjected to a coefficient alpha correlational analysis. The coefficient alpha internal consistency measures for the 15 8-item interest categories are shown in Table 4.7. Correlations ranged from .56 for Social Service to .84 for Clerical.

Table 4.7: Internal Consistency Measures

	Coefficient Alpha*
Mechanical	.83
Animal Care	.75
Plants	.66
Physical Sciences	.69
Life Sciences	.75
Artistic	.62
Literary Arts	.67
Social Service	.56
Physical Performing	.74
Personal Service	.68
Persuading/Influencing	.66

Protecting	.60
Leading	.76
Clerical	.84
Financial Detail	.73

*Comparable internal consistency measures of existing interest inventories range from .30 to .94.

With respect to internal consistency, the Strong-Campbell Interest Inventory (Campbell & Hansen, 1981) showed inter-item correlations of .30 or less. The Vocational Interest Inventory scales (Lunneborg, 1981) demonstrated estimates ranging from .54 for Culture to .80 for Science. The Leisure Activities Blank (McKechnie, 1974) showed internal consistency estimates ranging from .76 for Intellectual to .94 for Adventure and Mechanics. The Life Interests Inventory (Frisbie, 1982) demonstrated a range of internal consistency estimates from .76 to .93. The *Career Exploration Inventory* showed internal consistency measures ranging from .56 to .84.

Based on the previous examples, it can be concluded that the *Career Exploration Inventory* demonstrates internal consistency estimates comparable to that of existing interest inventories. The results of the quantitative and qualitative analyses suggest that items for the *CEI* were selected and placed into independent interest categories that were equally appropriate to work and to leisure activities.

Criterion-Related Validity

The second task statement guiding this study—to establish whether high scores on the interest scales are consistent with the individual’s identified work and leisure activities—deals with the criterion-related validity of the *CEI*.

The Committee to Develop Standards for Educational and Psychological Testing (1985) suggests that criterion and prediction information in a study should be obtained simultaneously in order to determine criterion-related validity. In my study, this was accomplished by asking subjects to list past, present, and future work and leisure activities. This information was used to calculate the number of “hits.” For example, if a person listed “having a garden” in the past and scored highest in the category labeled “Plants,” a hit was recorded. Table 4.8 summarizes the number of hits on an individual’s top three scales accurately measured by the *CEI*.

Table 4.8: Frequency of Accurately Measured “Hits” Using the Highest Three Interest Categories

Subjects’ Identified Interests (N = 210)	Number of Hits*	Percentage of Hits*
Work Past	151	72
Work Present	145	69

Leisure Past	162	77
Leisure Present	166	79

*Hits are defined as developmental work and leisure interests as accurately measured by the *CEI* and identical developmental interests identified by the subject on the Career Planning Guide.

As shown in Table 4.8, the *CEI* accurately measured subjects' (N = 210) top three past and present work and leisure interests. The *CEI* most accurately measured leisure interests in the present (79 percent) and leisure interests in the past (77 percent). The instrument also accurately recorded subjects' past work experience (72 percent). While present work interests were the lowest percentage (69 percent) measured by the *CEI*, this percentage is still relatively high considering that a large portion of the sample were unemployed and enrolled in a job-search program at the time of testing.

Table 4.9 shows the percentage of time that the *CEI* accurately identified a subject's (N = 210) primary work and leisure interests. To be considered a hit, the subject's highest-scoring work and leisure category had to match the work and leisure activities listed by the subject. As shown in Table 4.7, the *CEI* most accurately measured subjects' leisure interests. Past leisure interests of subjects were accurately identified 51 percent of the time, while present leisure interests were correctly identified 49 percent of the time. There was little difference in the past and present work interests measured by the *CEI*. The instrument accurately measured subjects' past work interests 43 percent of the time and present work interests 44 percent of the time.

Table 4.9: Frequency of Accurately Measured "Hits" Using the Highest Interest Category

Subjects' Identified Interests (N = 210)	Number of Hits*	Percentage of Hits*
Work Past	91	43**
Work Present	93	44**
Leisure Past	107	51**
Leisure Present	103	49**

* Hits are defined as developmental work and leisure interests as accurately measured by the *CEI* and identical developmental interests identified by the subject on the Career Planning Guide.

** Comparable interest inventories demonstrated hit rates ranging from 40 percent, plus or minus 5 percent.

Frisbie (1982) reviewed various studies in an attempt to determine what constituted an acceptable hit rate. In his study and the studies he cited, hit rates ranged from 40 percent, plus or minus 5 percent (Holland, Magoon, & Spokane, 1981); 41 to 78 percent (Laing, Lamb, & Prediger, 1982); 21 percent for chosen occupations and 18 percent for chosen leisure activities (Cairo, 1979); and

43 percent for occupational training, 23 percent for chosen job, and 42 percent for leisure activities (Frisbie, 1982). Using the top score for each category, the *CEI* obtained hit rates (43 to 51 percent) that are comparable to the data obtained from other interest inventories. Therefore, it can be concluded that subjects' high scores on the interest scales of the *CEI* were consistent with their identified work and leisure activities.

Construct Validity

The third task statement—to determine if continuing work and leisure interests can be inventoried from the past, in the present, and for the future—deals with the construct validity of the instrument.

Since construct validity is the extent to which a test measures a theoretical construct, construct validity for the *CEI* was measured by the number of times the instrument accurately predicted a subject's developmental, sustained interests. The Career Planning Guide was used by the subjects to list interests from the past, in the present, and for the future. From this list, sustained interests were identified as those interests which were expected to be present in all three time frames.

To determine if a hit occurred, these sustained interests from the Career Planning Guide were compared with the interest category in which the subject scored the highest on the *CEI*. If a particular interest was listed in all three time frames and matched the highest interest category, it was considered to be a hit and recorded in the appropriate category (i.e., work or leisure). For example, if a person listed "reading" as an interest in the past, present, and future and scored highest in "Literary Arts," a hit was recorded. Table 4.10 summarizes the number of developmental hits that were recorded.

Table 4.10: Frequency of Measured Developmental Interests

<i>Subjects' Identified Interests (N = 210)</i>	<i>Number of Hits*</i>	<i>Percentage of Hits*</i>
Work	114	54
Leisure	141	67

*Hits are defined as developmental work and leisure interests as measured by the *CEI* and identical developmental interests identified by the subjects on the Career Planning Guide.

Table 4.10 illustrates the *CEI*'s capacity to accurately measure subjects' (N = 210) work and leisure interests in the past, present, and future. The *CEI* accurately identified 54 percent of the subjects' sustained work interests (i.e., past, present, and future work interests). It also successfully identified 67 percent of the subjects' sustained leisure interests (i.e., past, present, and future leisure interests). Because the *CEI* is the first interest inventory to measure sustained interests over the life span, no existing instrument could provide comparable data. The results of this study indicate that the *CEI* accurately inventoried developmental, continuing work and leisure interests from the past, in the present, and for the future.

To further determine the construct validity of the *Career Exploration Inventory (CEI)* scales, two groups of data were analyzed. These data correlated scores on the *Career Exploration Inventory*

with scores on similar scales on other inventories (Liptak, 1996). The first group was a sample of 100 adults (55 males, 45 females) who had completed both the *Career Exploration Inventory* and the *Self-Directed Search* (Holland, 1978). The correlations between the scales on the two inventories are presented in Table 4.11. A very strong correlation was shown to exist between like-named scores on the two inventories. For example, Realistic on the SDS and Mechanical on the *CEI* ($r = .88$), Artistic on the SDS and Artistic on the *CEI* ($r = .45$), Social on the SDS and Social Service on the *CEI* ($r = .93$), Enterprising on the SDS and Leading on the *CEI* ($r = .98$), and Conventional on the SDS and Clerical on the *CEI* ($r = .92$).

I also investigated another group of adults ($N = 64$; 30 males, 34 females) who had completed the Myers-Briggs Type Indicator (MBTI; Myers & McCaulley, 1985). (See Table 4.12.) While the MBTI is a personality inventory and not an interest inventory, it does contain scales that show moderately high to high positive relationships with scales on the *CEI*. For example, the Extroversion scale on the MBTI correlated highest with the Persuading/Influencing scale ($r = .82$) on the *CEI*. Similarly, the Feeling scale on the MBTI correlated highest with the Artistic scale ($r = .87$) on the *CEI*.

A third group of adults ($N = 55$; 30 males, 25 females) completed the *Transferable Skills Scale* alongside the 3rd Edition of the *CEI*. (Liptak & Shatkin, 2007). As can be seen in Table 4.13, many of the scores on the *CEI* and *TSS* were positively correlated. For example, the Physical scale of the *TSS* and the Architecture and Construction scale of the *CEI* (.835), the Creative scale of the *TSS* and the Arts and Communication Scale of the *CEI* (.699), and the Interpersonal scale of the *TSS* and the Human Service scale of the *CEI* (.636) were all highly correlated at the 0.01 significance level.

Table 4.11: Correlations for CEI and SDS

	MECH	AN	PLA	PHY	LIFE	ART	LIT	SOC	PHY	PER	PER/	PRO	LEAD	CLER	FIN		
		SCI	SCI				PER	SER	INF								
R	.878	-.1	-.245	-.569	-.688		-.489	-.273	-.198	.033	-.779	-.001		-.387	-.506	-.604	-.5
I	-.1	-.014	.268	.095	.335	.443	.206	.022	.19	-.216	.317	0	.421	.053		-.054	
A	-.185	-.142	-.297	-.05		.019	.45		-.574	.143	.285	.006	.585	.045	.417	-.413	-.113
S	-.328	.608	.389	.567	.648	.855	.205	.931	.862	.775	.876	.404		.836	.296	.476	
E	-.444	.575	.55	.685	.83	.993	.316	.797	.771	.691	.861	.508		.984	.44	.545	
C	-.675	.511	.732	.893	.951	.696	.605	.391	.201	.797	.213	.71	.742	.919		.809	

Table 4.12: Correlations for CEI and MBTI

	MECH	AN	PLA	PHYS	LIFE	ART	LIT	SOC	PHY	PER	PER/	PRO	LEAD	CLER	FIN
	SCI	SCI								PER	SER	INF			
E	.344	.548	.337	-.365	-.259	.279	.393	.706	.433	.41	.822	-.195	-.099	-.365	-.365
I	-.291	-.538	-.341	-.34	.222	-.317	-.425	-.715	-.414	-.458	-.805	.218	.06	.34	.34
S	-.281	.621	.616	.43	.537	.93	.378	.66	.252	.678	.213	.241	.58	.43	.43
N	-.186	-.781	-.541	-.083	-.152	-.642	-.257	-.959	-.658	-.53	-.681	-.234	-.244	-.083	-.083
T	.614	-.279	-.21	-.148	-.318	-.678	-.099	-.383	.126	-.843	.152	-.158	-.317	-.148	-.148
F	-.524	.456	.299	.299	.453	.865	.242	.495	-.008	.826	-.031	.216	.47	.299	.299
J	-.272	-.374	-.49	.15	.059	-.288	-.602	-.525	-.325	-.279	-.725	.373	-.1	-.15	-.15
P	.249	.402	.497	-.162	-.074	.326	.554	.425	.218	.268	.632	-.293	.076	-.162	-.162

Table 4.13: Correlations for CEI and TSS

	Analytical	Numerical	Interpersonal	Organizational	Physical	Informational	Communicative	Creative
Agriculture & Natural Resources	-.181	.090	-.056	-.154	.214	.136	-.051	-.078
Architecture & Construction	.223	.175	-.210	-.114	.835**	.191	-.174	-.465*
Arts/Communication	-.002	-.347	.627**	.086	-.285	.026	.609**	.699**
Business & Administration	.337	-.010	.258	.673**	.030	.397	.426	.055
Education/Training	-.005	-.144	.440*	.113	.024	.043	.186	.155
Finance & Insurance	-.032	.716**	-.390	.194	-.013	.408	-.282	-.247
Government & Public Admin	.313	.232	-.291	.313	.336	.349	.195	-.116
Health Science	-.023	.068	.098	-.185	.243	-.096	.098	.142
Hospitality, Tourism, & Recreation	.192	-.167	.273	.331	.058	.088	.105	.208
Human Service	-.021	-.036	.636**	.255	-.409	.041	.515*	.630**

Information Technology	.412	.602**	-.280	.300	.140	.284	.117	-.116
Law & Public Safety	.226	.381	.120	.363	.419	.389	.077	-.143
Manufacturing	.146	-.165	-.113	-.196	.731**	.069	-.039	-.332
Retail & Wholesales Sales & Service	.444*	-.119	.378	.436*	.016	.203	.547*	.238
Scientific research, Engineering, & Math	.093	.274	-.366	-.163	.302	.107	-.091	-.229
Transportation, Distribution, & Logistics	.093	-.018	-.396	-.128	.522*	.113	-.175	-.371

** = Correlation is significant at the 0.01 level (2-tailed)

* = Correlation is significant at the 0.05 level (2-tailed)

Test-Retest Reliability

The fourth task statement—to describe the stability of scores over time from each of the interest scales—deals with test-retest reliability of the *CEI*.

To determine test-retest reliability, a sample of the original group of subjects was retested to help determine the stability of the basic interest categories over time. Subjects (N = 55) were retested after approximately three months, and correlations for the 15 interest categories ranged from .80 for Physical Sciences and for Animal Care to .92 for Mechanical. Table 4.14 shows the results of the test-retest analysis.

*Table 4.14: Test-Retest Reliability**

<i>Interest Category (N = 55)</i>	<i>Reliability Coefficient (X = .84)**</i>
Mechanical	.92
Animal Care	.80
Plants	.82
Physical Sciences	.80
Life Sciences	.86
Artistic	.82
Literary Arts	.81
Social Service	.81

Physical Performing	.82
Personal Service	.86
Persuading/Influencing	.82
Protecting	.88
Leading	.90
Clerical	.83
Financial Detail	.81

* Subjects were retested approximately three months after initial administration.

** Comparable interest inventories demonstrated reliability coefficients ranging from .81 to .91 over varying periods of time (two weeks to three years).

A frequently raised question in the literature concerns the minimum acceptable reliability of an instrument. Thorndike and Hagen (1969) contend that there is no general answer to this question and suggest that the answer depends on each specific situation. According to Ary, Jacobs, and Razavieh (1979, p. 212), “The degree of reliability needed in a measure depends to a great extent on the use that is to be made of the results.” They suggest that if measurement results are being used for decisions about a group or for research purposes, a reliability of .30 to .50 might be acceptable. However, if the results are being used for making important or irreversible decisions about individuals, instruments should have higher reliability. Similarly, Nunnally (1978) stated that, for research purposes, reliabilities in the range of .50 to .60 would be acceptable, but individual choice situations would require a minimum reliability of .90.

The SCII (Campbell & Hansen, 1981) reported test-retest statistics for the 1981 Occupational Scales of .91 over two weeks, .89 over thirty days, and .87 over a three-year period. The VII (Lunneborg, 1981) reported test-retest reliability of .81 over three weeks. (This was the median correlation.) The LAB (McKechnie, 1974) reported a mean reliability coefficient of .85 over a three-week period. The LII (Frisbie, 1982) reported a median reliability coefficient of .87 over a sixteen- or seventeen-day period. As reported in Table 4.13, the *Career Exploration Inventory* demonstrated a mean reliability of .84 over a three-month period.

With respect to short-term test-retest reliability, the developmental interest inventory developed in this study demonstrates reliability comparable to existing interest inventories. Based on the results of this study, it can be concluded that the *CEI* accurately describes the stability of scores over time from each of the interest scales.

Utility of the *CEI*

Based on the comments and suggestions recorded by the subjects on a Client Observation Sheet, the overall consensus among those completing the *CEI* was that the instrument was accurate and helpful in identifying and verifying interests. Some examples of subjects’ comments pertaining to accuracy of the instrument are these: “The results were very true” and “The results were very similar to those attained with the Strong-Campbell Interest Inventory.” The instrument also seemed to be very helpful in the career planning process. For example, many of the subjects made

comments such as these: “I wish I had such a tool when I first started working. Really helps in career planning” and “It made me think of options I didn’t know I had.”

I was primarily interested in the utility of a developmental format. No existing interest inventories (cf. Self-Directed Search, Strong-Campbell) have been designed to elicit individuals’ interests from a developmental format. The developmental format of the *CEI* seemed to be valuable in measuring individuals’ true interests. Additionally, it helped individuals explore work and leisure interests over the life span, rather than measuring only those interests they presently held and/or in which they were currently engaged.

Comments such as “I thought it was interesting to look at my interests from a past, present, and future perspective” and “The *CEI* helped me to clarify what I want to do in the future” seemed to indicate that a developmental format was effective. One subject, however, said, “I was unclear about the P-C-F format.”

During interviews with subjects who completed the *CEI*, several expressed surprise that work and leisure activities in which they were currently engaged were not among their top scores (cf. Barry’s case study). Upon further reflection, many of the subjects realized that these were not continuing interests, but rather activities in which they were engaged at the time of taking the inventory. The *CEI* appeared to be very effective in identifying sustained interests that individuals had developed throughout the years rather than only current interests.

I was also interested in the effectiveness of the *CEI* in helping subjects identify and explore both work and leisure interests. The measurement and exploration of both work and leisure appeared to be a valuable experience for a majority of the subjects. Some of their comments included these: “I was able to identify work options from my leisure pursuits.” “The *CEI* helped me form a plan for looking for a job—using carpentry skills developed in my leisure as a source of full-time employment.” “I like the idea of measuring leisure interests.” It appeared that by identifying both work and leisure interests, subjects were able to see how these interests interacted as their career developed.

I did not set out to develop an interest inventory that would match individuals with jobs. Instead, I designed the *CEI* to assist individuals in both the exploration of work and leisure interests and the exploration of the interaction of their work and leisure interests over time. The exploration aspect of the *CEI* also appeared to be helpful to the subjects and was reflected in comments such as these: “The suggestions for further research are helpful” and “The Exploration Guide was pretty interesting.”

On the other hand, the *CEI* appeared to some of the subjects to be too simplistic. This issue was addressed by comments such as “The *CEI* seems to be pretty good, but I find it simplistic and too general. The Kuder does the same thing, but more thoroughly” and “I thought the *CEI* was too simplistic and general.” However, I intended to develop a brief interest inventory for a variety of populations that could be easily self-administered, scored, and interpreted.

Thus, the results of this study indicate that the *CEI* is useful in determining adults’ work and leisure interests over time. This study suggests that the *CEI* is effective when used with unemployed and underemployed adults, as well as employed adults. It is also possible that the *CEI* might be useful in the identification and exploration of the interaction between work and leisure for a variety of populations, including secondary students, college students, handicapped individuals, non-English-speaking individuals, and other nontraditional groups. However, before

such extended use of the *CEI* is possible, the instrument would have to be administered to each of these various groups in order to establish norms for the individual populations.

Using the *CEI* in Career Counseling: Case Studies

The following sample case studies may be useful as an introduction to interpretation of the developmental work and leisure interests measured by the *CEI*. They have been altered to reflect changes in the interest scales in the third edition of the *CEI*.

The cases describe actual clients participating in the Job Training Partnership Act program in Pennsylvania, and they were selected to illustrate some of the typical *CEI* profile characteristics. In addition, the cases demonstrate how work and leisure activities interact throughout the subject's life to form his or her career.

Barry Jones

Barry is a 32-year-old male who was laid off from his job as a surveyor and sought employment through the Private Industry Council job placement and job search programs. Barry is married and has a 3-year-old son. Barry has a high school diploma and an associate degree in drafting. After completing his associate degree, Barry worked as a surveyor for the county. He held this position for two years before being laid off. His *CEI* Interest Profile indicates that his highest sustained interests are in "Architecture and Construction" (23), "Arts and Communication" (17), and "Agriculture and Natural Resources" (15). His raw scores in these areas are in the high range and average range respectively.

Barry was surprised that drafting did not come out as his main interest. After much discussion, he discovered that he had a sustained interest in home repair (Architecture and Construction) and in playing softball (Arts and Communication), yet only a minor interest in drafting because he thought he could get a good job with drafting skills. The developmental format of the *CEI* proved to be valuable in this case in identifying continuing, developmental interests.

During the past three years, Barry's main leisure interest had been in home improvements. He and his wife bought an old house that they were going to restore. During the restoration process, Barry was able to assist family and friends in various jobs, including electrical wiring, carpentry, plumbing, and masonry. Even though these were leisure activities, Barry reported that he was able to explore, utilize, and develop a variety of vocational skills. It was from these experiences that Barry discovered that he has an aptitude for plumbing and pipefitting. He had always enjoyed working on the house, but never thought he could get a job utilizing these leisure-time skills. However, Barry began looking for a job in which he could utilize some of these transferable skills. Through Barry's other leisure interest, softball, he heard from a friend about a job with a plumber's and pipefitter's union. Barry applied and was admitted as an apprentice. Barry continues to develop his skills by making home improvements in his leisure time.

On his Action Plan, Barry indicated that he has future aspirations of being self-employed. He indicated on the *CEI* that he hopes to combine his drafting skills and home improvement skills with his surveying and plumbing experience to start his own business by investing in old homes which he would restore and resell.

Valerie Francis

Valerie is a 33-year-old widow with two children. She is a high school graduate and a licensed cosmetologist. After being licensed, Valerie worked for three years as a cosmetologist. In her leisure time she liked to bake, read, and care for her children. However, she was unhappy with her choice of work and had not worked in the last five years. Valerie had spent this time caring for her husband, who was dying of cancer.

After her husband's death, Valerie began exploring suggestions for a new career. She is interested in a job that she would enjoy and that would enable her to adequately provide for her two young children. Valerie has been thinking that she has more than a passing interest in the nursing care that she provided for her husband. The results of the *CEI* indicated high interest scores of 21 in "Hospitality, Tourism, and Recreation," 19 in "Health Science," and 18 in "Human Service." Valerie was participating in the PIC program to enroll in the nurse's aide course at the local vocational school. She wanted to brush up on the basics and gain experience in a hospital setting. The results of the *CEI* helped her confirm her interest in nursing.

Her goal for the future is to be ready to enter the licensed practical nursing program at the local community college by fall and eventually work for a physician in private practice. The Work, Leisure, and Learning Activities Guide enabled Valerie to identify various ways she could develop nursing skills in her leisure time. Consequently, Valerie indicated on her Action Plan that she would continue to develop nursing skills in her spare time by volunteering at the community hospital.

Sue Smith

Sue is a 52-year-old office manager who works on the campus of a small college in Pennsylvania. She has been working at the school since she graduated from college and really likes her job. She has two children in college, and her husband works as an accountant. She is considering retirement to find something a little more meaningful to do. The problem is she really does not know what she wants to do. She has spent the last 30 years raising her children and working at the college.

Sue came in for career counseling to see what her other options would be in retirement. She kept saying, "I'm only 52, and I'm going to have all this time on my hands." The results of the *CEI* indicated high interest scores of 20 in "Business and Administration" and 22 in "Scientific Research, Engineering, and Mathematics."

After completing the *CEI*, Sue said that she figured she would get a high score on the Business and Administration scale because it is related to the job she had been doing for the past thirty years. She said she was "shocked," however, to see she scored so high on the Scientific Research, Engineering, and Mathematics scale. She had completed a bachelor's degree in history with a minor in archeology. She felt, however, that the degree was not very useful in the job market, but she felt she might like to use her interest in history and archeology in retirement. We looked at some options for her leisure time, and she talked about loving to watch historical programs on travel and history channels on television. She said that she might also like to go back to school and possibly pursue a master's degree in archeology "just for fun." We also looked at potential leisure activities she could get involved in that were related to history and archeology. She found several Internet sites that sponsored archeological digs for amateurs interested in learning more

about other cultures. She said she was very excited about this type of leisure activity, and she also said she might like to travel with her husband to some historical sites through the world.

Summary of the *CEI*

This study produced the *Career Exploration Inventory*, a self-administered, self-scored, and self-interpreted interest inventory designed to measure an individual's work and leisure interests throughout the life span. To accomplish this, the *CEI* utilizes a unique item format (circle **P** for Past Interest, **C** for Current Interest, and **F** for Future Interest) specifically designed to inventory the individual's interests from the past, in the present, and for the future.

The results of this study verified the utility of a developmental format which measures an individual's interests over time. Many subjects were pleasantly surprised at the instrument's accuracy in measuring continuing interests rather than just current interests. Additionally, items chosen for inclusion in the *CEI* were those items that were equally applicable to both work and leisure (e.g., "grow flowers or trees" or "care for people in a hospital") rather than items that directly referred to work (e.g., "working in a garden") or to leisure (e.g., "volunteering in a hospital").

After a series of pilot tests, two special features were included in the *CEI* to assist individuals in the identification and exploration of the interaction between their work and leisure interests. A Work, Leisure, and Learning Activities Guide was added to enable individuals to easily access various work and leisure options available. An Action Plan was included to help illustrate how a client's work and leisure activities from the past and present have combined and developed to form that individual's career. The Action Plan allows subjects to formulate a plan for the future.

Norms were developed for the *CEI* using two separate norm groups: unemployed/underemployed adults (N = 104) and employed adults (N = 106) ranging in age from 18 to 73. Validity of the *CEI* was comparable to existing work and leisure interest inventories. Coefficient alpha internal consistency measures ranged from .56 to .84, while subjects' top scores for the interest categories were consistent with their work and leisure activities 43 to 51 percent of the time. The *CEI* correctly identified sustained, developmental interests for work (54 percent) and leisure (67 percent). Test-retest reliability measures over a three-month period ranged from .80 to .92.

The *CEI* has been used in many studies in an attempt to further develop construct validity for the instrument. In all of these studies, the results suggest that the *CEI* does accurately measure work, leisure, and learning interests. For example, the *CEI* correlated extremely high with similar scales on both the Self-Directed Search and the Myers-Briggs Type Indicator.

Chapter 5: Summary and Future Directions

Theoretical Structure and Format of the *CEI*

The development of the *Career Exploration Inventory* was based on other major theories of career development:

- Super's (1980) Life Span, Life Space theory of career development
- McDaniels's (1984) concept of Career Equals Work Plus Leisure
- Liptak's (2000) Leisure Theory of Career Development

Utilizing aspects of these theories, a unique instrument is developed. The *CEI* was the first interest inventory to utilize a developmental item response format. This format allows an individual to identify developmental, sustained interests over the life span. Additionally, the *CEI* was developed to measure both work and leisure interests over time.

The *CEI* makes no attempt to simply match individuals and jobs by utilizing one of the existing classification systems; rather, it was designed to assist individuals in the exploration of work and leisure interests from the past, in the present, and for the future. Since all existing classification systems were primarily designed for matching clients with the world of work, I felt that using an existing classification system was inappropriate. Additionally, the *CEI* includes a Work, Leisure, and Learning Activities Guide, which enables the individual to explore a variety of occupational, educational, and leisure interests. Finally, the *CEI* includes an Action Plan, which helps individuals explore the interaction between work and leisure interests throughout the life span.

Inventory Development

The evolution of the first edition of the *Career Exploration Inventory* was a developmental process. The first phase of the process consisted of reviewing the career development literature and the existing work and leisure interest inventories. The reviews revealed two major needs in career development:

- The need for an interest inventory which can be used in career counseling, in leisure counseling, or in a holistic approach
- The need for an interest inventory that measures developmental, continuing interests over the life span

I found that an increasing number of career counselors view career as the combination and interaction of work and leisure throughout the life span. Additionally, these counselors view leisure as being as important as work. For the most part, vocational interest inventories have neglected the leisure component, while leisure inventories have neglected the vocational component. The Life Interest Inventory (Frisbie, 1982) was the only inventory in the literature that assessed both work and leisure interests. However, the literature review revealed no instrument that measured developmental, continuing interests over the life span. Since career counselors are increasingly recognizing career as a developmental process which takes place over the life span, a major need identified from this search was the need for an interest inventory that measures continuing, developmental work and leisure interests from the past, in the present, and for the future.

The next phase in the development of the inventory consisted of the actual construction of the interest inventory. I addressed important questions concerning the inventory's format, content,

scoring, and norming procedures. Item selection and placement were integral aspects of this phase. Twelve items representing work and leisure interests were selected for each of the fifteen interest categories. Independent judges were then asked to verify each item's form, content, and placement into interest categories. The items were then given to a random population and subjected to a coefficient alpha correlational analysis.

The third phase in the development of the inventory consisted of three pilot studies that were used to gather qualitative data about the inventory's format, clarity, and utility. Subjects (N = 15) participating in the pilot studies were randomly selected from Virginia Polytechnic Institute and State University, including graduate students, faculty, and staff in the Counselor Education Department. Subjects were asked to complete the *CEI* and a Client Observation Sheet. I also interviewed each of the subjects to obtain feedback and suggestions that were then used to develop the final form of the instrument.

The fourth phase in the development of the *CEI* consisted of field-testing the instrument to gather quantitative data about its validity and reliability. The final form of the *CEI* was given to 104 unemployed and underemployed adults participating in the Job Training Partnership Act program in southwestern Pennsylvania and 106 employees who had participated in program activities offered by the Employee Career Development Program at Virginia Polytechnic Institute and State University.

The fifth phase in the process consisted of analyzing the validity and reliability data to determine the effectiveness of the *CEI*.

Inventory Construction

Initial construction of the *CEI* began with a thorough review of the existing career and leisure interest inventories. The construction of the preliminary instrument was based on a series of decisions I made concerning the type of items to utilize, the item format, the type of response format to use, the use of occupational or homogeneous interest scales, scoring procedures, norming procedures, and controlling for sex bias.

A pool of 700 items generated for consideration were adapted from existing career and leisure interest inventories. Then, 180 items were selected for inclusion in the preliminary form of the *CEI*, based on their applicability to both work and leisure. Items that directly referred to work or to leisure were discarded or rewritten to be more general. For example, "working with plants" was changed to "plant a garden," while "volunteering to fight fires" was changed to "fight fires."

Form, content, and placement of the items into interest categories were verified by five independent, expert judges. The items were then given to a random pilot population (N = 30). Finally, a coefficient alpha correlational analysis was run on the data in order to determine the 8 items in each of the 15 categories that showed the highest clustering and accounted for the most error variance.

The 15 interest categories used for the original inventory were based on those developed by Super and Bowlsbey (1979) for the Guided Career Exploration course. Seventeen interest categories were originally chosen to represent work and leisure. The judges suggested that two of the interest categories be combined.

Additionally, the judges were responsible for naming the appropriate categories. The 15 scales were then subjected to statistical analyses to determine appropriate placement on the inventory.

In an attempt to measure continuing interests, the traditional format (**L** for Like, **U** for Uncertain, and **D** for Dislike) was discarded. I felt the format was limited in that it only measures static interests in the present. Instead, a format was developed to account for interests over time (**P** for Past Interests, **C** for Current Interests, and **F** for Future Interests). Although many career counselors utilize a developmental approach, no existing interest inventory has utilized a format to measure developmental interests.

Pilot studies gathered qualitative information concerning the inventory's utility and effectiveness. Results from the pilot studies suggested that the scoring format and profile sheet should be altered to allow subjects to more easily assimilate information concerning the interaction of work and leisure interests. Therefore, a Career Planning Guide was added to help clients organize and explore their developmental work and leisure interests. These additions enhanced the *CEI* format by making it a self-administered, self-scored, and self-interpreted interest inventory.

In conclusion, the purpose of this study was to determine the effectiveness of a career interest inventory which measures both work and leisure interests over the subject's life span. Independent interest categories representing both work and leisure activities were developed by combining qualitative analysis (a panel of five judges) and quantitative analysis (coefficient alpha correlational). Additionally, the scales demonstrated acceptable reliability and criterion-related validity over time. Because the *CEI* was designed to measure sustained interests over time, construct validity was also a crucial component.

Summary of the Findings

The first task statement that guided this study was to select and place items into independent interest categories that are equally appropriate to work and to leisure activities. The coefficient alpha internal consistency estimates for the 15 interest categories ranged from .56 in Social Service to .84 in Clerical. The highest correlations were between Clerical and Financial Detail (.87) and between Persuading/Influencing and Leading (.81), while the lowest correlations occurred between Mechanical and Personal Service (-.153) and between Mechanical and Life Sciences (-.132). The results of this study suggest that items for the *CEI* were selected and placed into independent interest categories that were equally appropriate to work and to leisure activities.

The second task statement that guided this study was to establish whether high scores on the interest scales are consistent with the individual's identified work and leisure activities. Using a subject's three highest interest categories, I found that the *CEI* most accurately measured leisure interests in the present (79 percent), leisure interests in the past (77 percent), work interests in the past (72 percent), and work interests in the present (69 percent).

Using a subject's highest interest category, past leisure interests were accurately identified by the *CEI* 51 percent of the time, while present leisure interests were correctly identified 49 percent of the time. There was little difference in the past and present work interests measured by the *CEI*. The *CEI* accurately measured subjects' past work interests 43 percent of the time and present work interests 44 percent of the time.

Using the highest score for each category, the *CEI* obtained "hit" rates comparable to those of existing interest inventories. According to this research, an individual's high scores on the interest scales of the *CEI* were consistent with his or her work and leisure interests.

The third task statement guiding this study was to determine if continuing work and leisure interests can be inventoried from the past, in the present, and for the future. I used the information to calculate the number of hits for the leisure and work categories.

The *CEI* accurately identified 54 percent of the subjects' sustained work interests and 67 percent of the subjects' sustained leisure interests. Because the *CEI* is the first interest inventory to measure sustained interests over the subject's life span, no existing instrument could provide comparable data. However, the results of this study indicate that more than half of the time the *CEI* accurately measured developmental, continuing work and leisure interests throughout the life span.

The fourth task statement guiding this study was to describe the stability of scores over time from each of the interest scales. Subjects (N = 55) were retested after approximately three months, and correlations ranged from .80 for Physical Sciences and for Animal Care to .92 for Mechanical. The *CEI* demonstrated a mean reliability of .84 over the three-month period. This reliability estimate was comparable to existing interest inventories. Based on these results, I concluded that the *CEI* does demonstrate stability of scores over time.

Review of the Inventory's Utility

The overall consensus among those completing the *CEI* was that the instrument was accurate and helpful in identifying and verifying work and leisure interests. Most felt the instrument was accurate and yielded results similar to other interest inventories.

The instrument also seemed useful in the career planning process. The developmental format aided subjects in looking at their work and leisure interests over their life span. The identification and exploration of both work and leisure was valuable for a majority of the subjects. The exploration aspect of the *CEI* also was helpful to subjects in identifying career alternatives.

On the other hand, the *CEI* appeared to some of the subjects to be too simplistic and too general. However, in this study, my intent was to develop a brief interest inventory that could be utilized with a variety of populations and that could be easily self-administered, scored, and interpreted.

Thus, the results of this study indicate that the *CEI* is useful in determining adults' work and leisure interests over time. Since the *CEI* was normed on unemployed/underemployed and employed adults, this instrument is effective when used with these populations. The *CEI* might also prove to be effective in helping secondary students and college students identify and explore the interaction between work and leisure interests. This instrument can also facilitate career development in other populations such as retirees, non-English-speaking subjects, and the handicapped. However, for the *CEI* to be effective, norms should be established for each of these populations.

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