Self-Directed Search Interest Profile Elevation, Big Five Personality Factors, and Interest Secondary Constructs in a College Career Course

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SELF-DIRECTED SEARCH INTEREST PROFILE
ELEVATION, BIG FIVE PERSONALITY FACTORS, AND
INTEREST SECONDARY CONSTRUCTS IN A COLLEGE CAREER COURSE

BY

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ABSTRACT

This study was designed to address gaps, extend previous research, and increase the interpretability of scores individuals earn on the Self-Directed Search. To accomplish this, the study investigated the relationships among interest profile elevation, personality, and interest secondary constructs. Study participants consisted of 209 college students enrolled in an introductory career development course at a large southeastern university. The summary scores of the six domains of the Self-Directed Search (SDS) were used to measure interest profile elevation and interest secondary constructs (i.e., consistency, congruence, coherence, and two measures of differentiation). The NEO-FFI was used to measure the five factors of personality (i.e., Neuroticism, Extroversion, Openness, Agreeableness, and Conscientiousness). The research question for this study was, “In a sample of college students enrolled in an introductory career development course, what is the relationship among interest profile elevation, personality, and interest secondary constructs?”

This study explored and was organized by three domains: 1) Interest Profile Elevation and Personality; 2) Interest Profile Elevation and Interest Secondary Constructs; and 3) Interest Secondary Constructs and Personality. In the first domain, interest profile elevation was significantly related to Extroversion, Openness, and Conscientiousness. The latter two also predicted significant variance in interest profile elevation demonstrated in significant linear and stepwise regressions. The MANOVA conducted in this domain was composed of the mean scores of the personality variables set into quartiles in relation to interest profile elevation. The MANOVA was statistically significant and subsequent pair-wise comparisons showed that the highest quartile of Openness was significantly different from the other three quartiles in relation to interest profile elevation. The orthogonal contrasts demonstrated that Openness had a linear and quadratic relationship with interest profile elevation. Conscientiousness was shown to have a significant quadratic relationship with interest profile elevation.

In the second domain, interest profile elevation was significantly related to the following interest secondary constructs: differentiation high-low, differentiation Iachan, and consistency.
These three constructs also accounted for significant variance in interest profile elevation as demonstrated in significant linear and stepwise regressions. There were some unique findings in relation to differentiation. The two measures of differentiation were correlated with interest profile elevation in the opposite direction. They also appeared to account for significant but unique variance in interest profile elevation.

The third domain, interest secondary constructs and personality, was analyzed using a canonical correlation. This resulted in one significant root with differentiation high-low, Conscientiousness, Agreeableness, and Extroversion accounting for 20% of the variance in this root. The root was labeled maturity based on the connotations associated with these four variables.

Limitations, implications for counseling, and recommendations for future research were presented. Several ideas for how the information from the current study can be used in practice were also included. The suggestions for future research would add to the state of the science in this area of counseling psychology.
CHAPTER I
INTRODUCTION

The purpose of this chapter is to introduce the reader to the study, “Self-Directed Search Interest Profile Elevation, Big Five Personality Factors, and Interest Secondary Constructs in a College Career Course.” This chapter includes an introduction, the social and professional problem relevant to this study, purpose of the study, the research question, and definition of terms.

The issues of personality and interest secondary constructs in Holland’s theory (1973/1997) are two frequently researched topics. The idea of interest profile elevation is a less researched area but there has been recent attention shown to this construct (Fuller, Holland, & Johnston, 1999; Gottfredson & Jones, 1993; Holland, Johnston, & Asama, 1994; Spokane, Luchetta, & Richwine, 2002). Research in personality is a broad topic. Personality will be defined with regards to the Five Factor Model of personality as it is operationalized by Costa and McCrae’s NEO assessments (1985, 1992). This study looked at personality in relation to vocational interests. Vocational interests can also be a broad topic. Within vocational interests, this study specifically focused on Holland’s (1997) perspective on vocational interests, the secondary constructs developed in his theory, and the concept of interest profile elevation on instruments utilizing his theory.

Social Problem

All persons tend to search for a better and more effective way to live their lives. Counselors and therapists that seek to assist people with this issue often refer to it as life management, which can entail many things. Alfred Adler referred to challenges that occur in three main life tasks. These life tasks are society, sex, and work (Mosak, 2000). This research focused on the latter. By focusing on the improvement of work and careers of clients, it is hoped that they can seek a happier, better-adjusted life. Poor psychological adjustment reduces the
quality of life for the individual and places additional financial stress on already burdened social services as individuals seek help with their problems.

Professional Problem

Practitioners have been known to use and interpret assessments in ways that are not consistent with research (Fuller, Holland, & Johnston, 1999). They also may not use or interpret an assessment to its fullest due to a lack of knowledge about the research on an interpretable aspect of the instrument. Based on the ethical obligation to interpret assessments appropriately (APA Council…, 2002) and with full technical data to support respondents’ results (American Counseling…, 1995), it is not ethical practice to interpret an assessment without knowledge of research to support that interpretation. Not utilizing an instrument to its fullest potential can be a waste of resources. Many counselors are faced with limited financial and human resources (Albee & Ryan, 1998; Bergeson, Roost, & Phillips, 1975; Lacour & Carter, 2002; Verlander, 1985). If a counselor can find a way to learn as much about a client through the use of one assessment instead of two (i.e., using an interest inventory in place of an interest inventory and a personality inventory), this will save staff and client time (i.e., human resources will be saved) and the administration of another assessment (i.e., financial resources will be saved).

This study has potential to contribute to theory and practice in various ways. It was designed to address gaps, extend previous research, and increase the interpretability of Holland-based vocational interest assessments. It may also increase researchers’ and practitioners’ understanding of the relationship among interest profile elevation, personality, and interest secondary constructs.

Purpose of the Study

The purpose of this study was to examine the relationships among interest profile elevation, personality, and interest secondary constructs. Interest profile elevation was analyzed to investigate its relationship to personality and interest secondary constructs. The relationship between personality and interest secondary constructs was also explored.

Interest profile elevation and interest secondary constructs were measured using the Self-Directed Search (Holland, Fritzsche, & Powell, 1994). Personality was measured using the NEO-Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992), a version of the NEO assessments that yields scores only on the Big Five factors of personality (i.e., Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism).
This study was conducted using archival data comprised of a sample of college students who were registered for an introductory career development class. Most of the students who registered for this course desired assistance related to career decisions.

Some recent studies have examined interest profile elevation’s relationship to personality, but none have examined its relationship with interest secondary constructs. A few studies have included some aspects of interest secondary constructs’ relation to personality, but none have included all interest secondary constructs and all five factors of personality. No prior study was found that explored the relationship among interest profile elevation, personality, and interest secondary constructs with a sample of college students. Ultimately, the purpose of studying all of these variables together with a college student sample was to enhance vocational psychology research and practice.

**General Question of Interest**

Given the contribution a better understanding of interest profile elevation’s relation to personality and interest secondary constructs could provide, the following research question was posed: In a sample of college students enrolled in an introductory career development course, what is the relationship among interest profile elevation, personality, and interest secondary constructs?

**Assumptions**

1) The construct of personality traits and interests can be measured through inference.
2) The NEO-FFI (Costa & McCrae, 1992) can provide an accurate measure of the Big Five personality traits.
3) The Self-Directed Search (Holland, Powell, & Fritzsche, 1994) can provide an accurate measure of participants’ interest secondary constructs and interest profile elevation.
4) Participants will respond to the self-report questionnaires openly and honestly.

**Definition of Terms**

Many terms are used throughout this manuscript which may not be common to everyday speech. The following definitions are provided to facilitate the reader’s understanding of these terms.

**Agreeableness (A)** - associated with interpersonal tendencies (Costa & McCrae, 1992).
Coherence of aspirations - determined by examining the daydreams occupations to see if the same RIASEC letter appears first in the first three occupational codes (Reardon & Lenz, 1998).

Congruence - broadly defined as the degree of match between a person and an environment. Congruence on the SDS is calculated by the degree of match between a person’s assessed and expressed interests (Reardon & Lenz, 1998).

Conscientiousness (C) - one’s tendency toward planning, organizing, and carrying out tasks. The C factor is associated with the common descriptor, character (Costa & McCrae, 1992).

Consistency - broadly defined is “the degree of relatedness between personality types or between environmental models” (Holland, 1997, p. 4). As it is operationalized on the SDS, consistency of a person’s three-letter code is determined by how close the first two letters of that code are on the hexagon (Reardon & Lenz, 1998).

Differentiation - “the level of definition or distinctness of a personality profile” (Reardon & Lenz, 1998, p. 262).

Extraversion (E) - the extroversion/introversion tendency in people (Costa & McCrae, 1992).

Five-Factor Model of Personality – “…a representation of the structure of traits which was developed and elaborated over the past four decades. The five factors represent the most basic dimensions underlying the traits identified in both natural languages and psychological questionnaires” (Costa & McCrae, 1992).

Interest Profile Elevation - the sum of the six section scores on the SDS (Fuller, Holland, & Johnston, 1999).

Interest Secondary Constructs - meant to moderate predictions about a person or environment based on the Holland code he or she receives. The secondary constructs of focus in this study include consistency, differentiation, congruence, and coherence. They also include identity and professional judgment.

Neuroticism (N) - contrast between adjustment or emotional stability and maladjustment or neuroticism (Costa & McCrae, 1992).

Openness to Experience (O) - includes such elements as active imagination, aesthetic sensitivity, attentiveness to inner feelings, preference for variety, intellectual curiosity, and independence of judgment (Costa & McCrae, 1992).
Personality – For the purpose of this study, personality is defined by the Five Factor Model of personality. These five factors include Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism.

Delimitations

This study did not attempt to address all potential correlates and predictors of interest profile elevation, personality, or interest secondary constructs. It focused on the relationships among these variables in a sample of college students in a career course. This limits the generalizability of this study to samples with similar characteristics. In addition, the sample was comprised of volunteers, which may have different motivations or characteristics of a non-volunteer sample. This study did not measure these variables from all possible perspectives or operationalizations. For example, this study defines personality through the five-factor model of personality as operationalized by the NEO-FFI. There are many other theories of personality that are not taken into account in this study. Also, interest profile elevation is defined in relation to the Self-Directed Search and could potentially be defined in relation to several vocational interest assessment tools, which were not taken into account in this study.
CHAPTER II
REVIEW OF THE LITERATURE

This research examined the relationship among interest profile elevation, interest secondary constructs, and personality. Interest profile elevation and interest secondary constructs were defined under Holland’s theory, and personality was defined under the Five Factor Model of personality as operationalized by Costa and McCrae (1985, 1992). The purpose of this chapter is to familiarize the reader with the literature relevant to the proposed study. First, literature relevant to personality, the Five Factor Model of personality, and Costa and McCrae’s (1985, 1992) instrument, the NEO, will be reviewed. Next, Holland’s theory (Holland, 1997) and the instrument to be used in this research, the Self-Directed Search (Holland, Fritzsche, & Powell, 1994), will be discussed. Holland’s theory and the literature that connects it to personality literature will be presented. The discussion of Holland’s theory and the SDS will provide a background for the variables of concentration, interest secondary constructs and interest profile elevation. Subsequently, literature specifically relevant to secondary constructs and interest profile elevation will be explored.

**Personality**

The idea of labeling people based on personality traits has been around for nearly 100 years. In the field of psychology, there was an interest in the idea of identifying specific personality traits in the 1920’s but there was little interest in that area again until the 1960’s (Tupes & Christal, 1961). Before 1961, the concept and definition of personality was rarely agreed upon among personality theorists. An article by Tupes and Christal (1961) was the first to uncover some underlying similarities among the varying opinions and theories of personality (McCrae & John, 1992). Tupes and Christal looked at intercorrelations among 35 personality traits found in various research studies. Five strong and recurrent factors emerged from their
analysis. These factors were labeled Surgency, Agreeableness, Dependability, Emotional Stability, and Culture.

The authors made no definite claims about these personality factors and their work went little noticed for about 20 years until personality theorists began to recognize that these five domains were fundamental dimensions of personality (McCrae & John, 1992). Now these five factors, dubbed the Five-Factor Model (FFM), have been used in a variety of settings such as with psychopathology (Widiger & Trull, 1992), understanding health (Smith & Williams, 1992), adolescent adjustment (Graziano & Ward, 1992), close relationships (Buss, 1992), and with the study of traits and temperament (Watson & Clark, 1992).

Labeling the Factors

Even though most personality theorists have come to agree that these five factors are essential to understanding human personality, there has been much debate on what to call these factors. Norman (1963) labeled the factors I: Extraversion or Surgency; II: Agreeableness, III: Conscientiousness; IV: Emotional Stability; and V: Culture. Researchers still use these labels. Yet, most are probably familiar with the labels coined by Costa and McCrae (1980). They refer to the five factors as Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. Their terms were popularized by their instrument, the NEO-PI, and the latest full version of that instrument, the NEO-PI-R (Costa & McCrae, 1985/1992).

Digman and Takemoto-Chock (1981) believed the label, Agreeableness, to be too simplistic for the domains of personality it is meant to explain. Therefore, they proposed that it is more appropriately labeled Friendly Compliance vs. Hostile Noncompliance. They also saw Will to Achieve as a more fitting name for the Conscientiousness factor. Some interpretations of the FFM label Costa and McCrae’s Openness to Experience factor as Intellect (Costa & McCrae, 1992).

Operationalizing the Five Factor Model

Personality assessment and the theories that spawned them have been around for over 80 years (Costa & McCrae, 1992; Digman, 1979; Eysenck & Eysenck, 1964; Jung, 1923/1971; Murray, 1938; Sullivan, 1953). The different assessments that measure personality have various roots. Some assessments operationalized a personality theory of the creator(s), others operationalized research findings in the area of personality, and others have come to be revised into combinations of both.
Briggs (1992) provided a comparison of many of these instruments, and recommendations were made for proper contexts in which to use the various instruments. Briggs’s comparison was made between adjective-based measures of the FFM model and phrase-based measures of the model such as with Costa and McCrae’s NEO (1992). Adjective-based measures have roots in the history of personality theory. The ideas for what traits or descriptors form personality came from examining the human language and adjectives people use to describe self and others. This is often referred to as the lexical hypothesis or tradition (Wiggins, 1996). The adjective-based measures have stayed true to this idea.

Briggs (1992) recommended that if a researcher were looking for unelaborated descriptions of personality, then an adjective-based measure of the five factors would serve those needs. Yet, if a researcher desires more precision in the measurement of the five factors, he or she may want to use a phrased-based measure. Briggs stated that the NEO-PI, “provides a faithful representation of the five-factor model” (p. 287).

Briggs (1992) provided a warning by quoting Allport (1937), “First, the structure of the trait lexicon should not be confused with the underlying structure of personality. The surface structure of personality and the deep structure of personality are not likely to be equivalent” (p. 288). This criticism of Allport’s is congruent with McAdams’ (1992) first of six limitations of the FFM. It is important to remember as the field of personality psychology begins to converge in agreement about the five factor model, one should not make the leap to believe the entire structure of personality has been uncovered through the FFM. Yet, Briggs did provide some support for the benefits of using the NEO instruments to measure what we have uncovered about personality and this operationalization of the FFM was one of the instruments used in this study. The NEO-PI-R and the NEO-FFI

The NEO Personality Inventory (NEO-PI-R) measures normal personality traits in adults based on the Five Factor Model of personality. The NEO-PI-R is a “concise measure of the five major dimensions, or domains, of personality and some of the more important traits or facets that define each domain” and “embodies a conceptual model that distills decades of factor analytic research on the structure of personality” (Costa & McCrae, 1992, p. 1). The five measured domains are labeled Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C). These domains and the facet scales that comprise them are defined in the following section.
The NEO Five-Factor Inventory (NEO-FFI) was the measure used in this study. It is a “brief, comprehensive measure of the five domains of personality” (Costa & McCrae, 1992, p. 11). It takes about 10 minutes to administer and does not provide information on the specific facet scores, only on the five basic domain areas. When the NEO-FFI was correlated with the domain scales of the NEO-PI-R, correlations were .92 to .87 range. Costa and McCrae (1992) acknowledged that the NEO-FFI is not equivalent to the full version, the NEO-PI-R. They stated, “some precision is traded for speed and convenience” (p. 54).

Briggs (1992) viewed the NEO-FFI as an easy to comprehend, short, and well-written measure of broad personality. Briggs stated that the NEO-FFI may be the best choice when working with less educated samples rather than the more difficult instruments that are single-adjective based.

*Defining the Five Factors*

Because the focus of this research was on the NEO and Costa and McCrae’s work regarding the FFM of personality, the definitions of the factors were based on their work. Costa and McCrae (1992) noted that “by describing the individual’s standing on each of the five factors, we can provide a comprehensive sketch that summarizes his or her emotional, interpersonal, experiential, attitudinal, and motivational styles” (p.14). They defined these encompassing factors or domains found on the NEO-PI-R and NEO-FFI in the following way.

Neuroticism (N) represents the contrast between adjustment or emotional stability and maladjustment or neuroticism. Those that score high on the N scale of the NEO are prone to have irrational ideas, less able to control impulses, and poor when coping with stress. Those with low scores on the N scale are typically calm, relaxed, and able to face stressful situations without becoming upset (Costa & McCrae, 1992).

The Extraversion (E) scale measures the extrovert/introversion tendency in people. Extroverts are the prototypical assertive, active, and talkative salesperson. In fact, the E scale and enterprising occupations are strongly correlated (Costa, McCrae, & Holland, 1984). Costa and McCrae (1992) believe introverts are harder to define and that they should not be considered the opposite of extroverts but those that lack extraversion in their personalities. The authors make a point to distinguish their interpretation of extraversion from that of Jung’s (1923) theory. Jung defines the extraversion/introversion dichotomy as including the concept of introspection. Costa and McCrae include that aspect of personality in their Openness to Experience factor. They also
state it is important to look past the traditional dichotomous (i.e., happy-unhappy, outgoing-shy) explanations of personality to a richer, more complex outlook on what personality may be.

The Openness to Experience (O) factor includes such elements as active imagination, aesthetic sensitivity, attentiveness to inner feelings, preference for variety, intellectual curiosity, and independence of judgment. Those scoring high on the O factor lead experientially richer lives, entertain unconventional ideas, and experience emotions stronger than do “closed” individuals. Those scoring low on the O factor, or closed individuals, have a narrower scope and less intense interests. The O factor is often associated with intelligence but should not be interpreted as equivalent to intelligence. The authors make the point that open and closed individuals both play important roles in society and neither should be considered a negative aspect of self (Costa & McCrae, 1992).

The Agreeableness (A) factor is associated with interpersonal tendencies. Therefore, one high in A is altruistic, sympathetic, and eager to help. A person low in A can be antagonistic, egocentric, skeptical of others, and competitive. Costa and McCrae (1992) noted that neither of the extremes on this factor is ideal. A high level of agreeableness is not advantageous in many professions such as law and armed services. A low level of A is associated with being Narcissistic, Antisocial, Paranoid, and having a personality disorder. High A is associated with Dependant Personality Disorder.

The Conscientiousness (C) factor attempts to assess one’s tendency toward planning, organizing, and carrying out tasks. The C factor is associated with the common descriptor, character. High C scores are indicative of a person that is scrupulous, punctual, and reliable. A person very high in the C factor may even exhibit tendencies such as being a workaholic or compulsively neat. Low C scores are typical of those that are not as reliable in how they apply their moral standards and are less exact in goal seeking (Costa & McCrae, 1992).

*The Facet Scales*

Costa and McCrae (1992) further defined the five personality factors with facet scales. Six more specific scales represent each of the five personality factors. Examination of the facet scales on the NEO-PI-R can provide a more fine-grained analysis of persons or groups.

The facet scores of the Neuroticism factor include: N1: Anxiety; N2: Angry Hostility; N3: Depression; N4: Self-Conscientiousness; N5: Impulsiveness; and N6: Vulnerability.
The facet scores of the Extraversion factor include: E1: Warmth, E2: Gregariousness; E3: Assertiveness; E4: Activity; E5: Excitement Seeking; and E6: Positive Emotions.

The facet scores of the Openness factor include: O1: Fantasy; O2: Aesthetics; O3: Feelings; O4: Actions; O5: Ideas; and O6: Values.

The facet scores of the Agreeableness factor include: A1: Trust; A2: Straightforwardness; A3: Altruism; A4: Compliance; A5: Modesty; and A6: Tender-Mindedness.

The facet scores of the Conscientiousness factor include: C1: Competence; C2: Order; C3: Dutifulness; C4: Achievement Striving; C5: Self-Discipline; and C6: Deliberation.

These facet scales are only measured by using the NEO-PI-R and cannot be determined by administering the shorter NEO-FFI.

**Criticisms of the FFM**

McCrae and John (1992) outlined four major criticisms of the Five-Factor Model. These criticisms included the idea that there are too few factors included in this definition of personality and that such instruments as Cattell’s 16PF (Cattell, Eber, & Tatsuoka, 1970) provide a better, broader measure of personality. The second criticism is the opposite of the first. Some researchers have stated that there are too many factors included in the FFM. They have stated that some lesser combination of the factors would suffice in explaining human personality. The third criticism is that the FFM only represents how we see and define ourselves, not how others see us. The final criticism was that the FFM is nothing more than our projection of cognitive biases onto the targets we rate (i.e., self or others). One example given of a possible cognitive bias was human’s limitation in information processing. If humans were able to process more information, perhaps we would detect a greater number of personality traits among others.

McAdams (1992) highlighted six major limitations of the five-factor model. These criticisms are (a) inability to address core constructs of personality functioning beyond the level of traits; (b) limitations with respect to the prediction of specific behavior and the adequate description of persons’ lives; (c) failure to provide compelling casual explanations for human behavior and experience; (d) disregard of the contextual and conditional nature of human experience; (e) failure to offer an attractive program for studying personality organization and integration; and (f) reliance on simple, noncontingent, and implicitly comparative statements about persons. Despite the fact that McAdams believed that, “the emergence of the five-factor model of personality is an important and positive development in the field of personality
psychology” (p. 355), he held that the big five personality factors may be important in conducting personality studies but not in the understanding of the integrative model of personality.

Conclusion

The Five Factor Model of personality has had its critics, and even proponents have not claimed that the FFM encompasses the entire domain of personality. Yet, many have said that it is the best researched and most operationalized modern theory of personality. Costa and McCrae’s NEO assessments are among the most popular instruments that attempt to operationalize the FFM. Their instruments are also subject to criticism and praise. Yet, the NEO instruments seem to be the best, or at least most popular and easy to use, personality theorists and assessment authors have developed thus far.

Vocational Interests

In 1946 when Division 17 of the American Psychological Association was founded, its purpose was stated as to “promote personal, educational, vocational, and group adjustment in a variety of settings” (Division 17, 2004). Along with an interest in counseling people and not problems, the merging of the fields of vocational guidance and psychometrics lead to the creation of the field of counseling psychology (Super, 1955). Vocational interests have been a cornerstone of the field of counseling psychology and career counseling from its inception (Betsworth & Fouad, 1997). Early experts in the study of vocational interests included Fryer (1931), Kuder (1939), and Strong (1943).

Major theorists have given many opinions as to the origins of vocational interest. Hansen (1984) reported that these hypotheses for the origin of vocational interests included environment and social influences, genetic, personality traits, motives, drives, needs, and expressions of self-concept. Holland (1997) posited that interest preference arises out of biological inheritance, the child-parent relationship, and environmental interactions. There has never been universal agreement as to the origins of vocational interests (Betsworth & Fouad, 1997).

The work regarding vocational interests quickly moved into classification despite a lack of clarity in understanding them. The initial classification and measurement of interests came from the empirical perspective. Assessments, such as the early versions of the Strong Interest Inventory, were empirically derived and the theory was added much later (Donnay, 1997).
Guilford, Christensen, Bond, and Sutton (1954) completed a factor analysis of human interest, which yielded six major factors. These factors helped to confirm the ideas of a new theory of vocational interests, Holland’s theory. Guildford et al. stated that the six main factors were mechanical, scientific, social welfare, clerical, business, and esthetic. These interest type labels were very similar to those Holland developed through his experience as a counselor. Practitioners and theorists have many ideas on how to conceptualize and work with client vocational interests. Yet, few have developed the following of Holland’s theory (1997).

**Holland’s Theory and the Self-Directed Search**

Holland’s theory is meant to inform the practitioner and, subsequently, tools have been developed to aid in career counseling (Holland, Powell, & Fritzsche, 1994). The Self-Directed Search (SDS) is an example of an instrument that helps to operationalize Holland’s theory (Holland, Fritzsche, & Powell, 1994). In the following section, Holland’s theory will be discussed, the Self-Directed Search will be explained, and literature linking the concepts of vocational interest and personality will be presented.

In order to appreciate and use the Self-Directed Search, it is essential that one understand Holland’s RIASEC theory. Holland’s theory includes eight theoretical propositions (Spokane, Luchetta, & Richwine, in Brown, 2002), the first four of which are considered to be key assumptions (Holland, 1997). These eight theoretical propositions are as follows:

1. Most people can be categorized as one of six personality types: Realistic, Investigative, Artistic, Social, Enterprising, or Conventional (RIASEC).
2. There are six model environments that are labeled the same as the six personality types. An environment may be a job, a leisure activity, a college major, or any other area of life in which we operate. People with the same personality type dominate these environments. For example, a Realistic environment is most likely to be comprised of Realistic personalities.
3. People search for environments that will let them exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles. In other words, people seek out life experiences that are similar to and complement their personality type.
4. Behavior is determined by an interaction between personality and environment (Holland, 1997).
5. People find environments reinforcing and satisfying when environmental patterns resemble their personality patterns.
6. Incongruent interactions stimulate change in human behavior; conversely, congruent interactions encourage stability of behavior.

7. People resolve incongruence by seeking a new and congruent environment or by changing personal behavior and perceptions. In other words, for a person to be happy in their environment the environment must match their personality preferences. If it does not match, the person must alter his or her preferences.

8. The reciprocal interactions of person and successive jobs usually lead to a series of successful and satisfactory cycles (Spokane, Luchetta, & Richwine, in Brown, 2002).

Another important aspect of Holland’s theory that is directly seen in the SDS is the RIASEC typology. Many refer to Holland’s theory of careers as the RIASEC theory. RIASEC is based on the titles he has given to the personality types that represent the classification system in his theory: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. These types are defined by the vocational and avocational preferences, life goals and values, self-beliefs, and problem-solving style. These six types are represented graphically around a hexagon. Each of the six points of the hexagon is labeled with a type. This graphic demonstration of the RIASEC model demonstrates the relationship among the types, which will be further discussed in the section on consistency (Holland, 1997). When a person is administered an instrument utilizing Holland’s theory, their results produce a two or three letter code (depending on the instrument used) that represents their personality type. Assumptions are made regarding that person based on the three-letter code they receive.

The SDS utilizes the key assumptions and the RIASEC typology to assign each test taker with a three-letter code. This code represents the three RIASEC areas that best represent the personality of the test taker. The first letter in the three-letter code would represent the personality type that is most dominant for that person. For example if a test taker was given the code of SEA, this person would have personality traits most consistent with the Social area, and they would also have personality traits that match with the Enterprising and Artistic areas. This person would not possess as many personality traits that are consistent with the Realistic, Investigative, and Conventional areas. This is why the letters RIC did not show up in their code.

The Self-Directed Search is based on Holland’s theory and a focal point of this study. On the SDS, individuals rate their activities, competencies, preferences, occupations, and self-estimates in terms of the RIASEC areas. Individuals are also given the opportunity to list their
occupational aspirations, which are referred to as occupational daydreams. Aspirations are based on the three-letter code of the first five aspirations.

Two basic interpretative ideas (congruence and personality) and six supplementary interpretative ideas (coherence of aspirations, vocational identity, consistency, differentiation, commonness, and professional judgment) are indicators of career planning status or interest structure that have been isolated within the SDS. They are most commonly referred to as secondary constructs (Reardon & Lenz, 1998). It is speculated that the professional judgment interpretative construct encompasses many unidentified or unspecified constructs that may aid in interpretation. Gottfredson and Jones (1993) indicated that the idea of interest profile elevation has been subsumed under the umbrella concept of professional judgment of a counselor. These constructs will be explored in detail later in this chapter.

Criticisms and comments on RIASEC theory and the SDS. Holland’s theory and the SDS have received much attention in the literature. It has sparked an enormous amount of research, criticism, and praise. Holland has attempted to incorporate much of the research and criticisms into the revisions of his statements on his theory and the SDS (Reardon & Lenz, 1998). Holland’s theory was criticized from the beginning as he began his work to develop a career theory. Instead of developing a theory using empiricism as it had been done by many of his colleagues at the University of Minnesota, Holland was utilizing a more deductive approach of theory development. After the development of his theory, it received the criticism most typological theories receive. These criticisms included the ideas that typology theories predict best when scores are at the extremes and when factors such as intelligence and socio-economic status are held constant (Reardon & Lenz, 1998).

Nearly every textbook on the topic of career theory or career counseling includes detailed information on Holland’s theory. Many of the most widely used texts on these topics also make comments about Holland’s theory. Herr and Cramer (1996) gave praise to the influence of Holland’s theory and note that there is research to be done related to the hypotheses generated by the theory. Isaacson and Brown (1997) touted it as the “most influential of the extant theories” (p. 24).

Zunker (1994) wrote about the many positive aspects of Holland’s work and related instruments. He acknowledged the limitation of the theory and the instruments by noting that they do not provide strategies to enhance the necessary self and occupational knowledge.
Osipow and Fitzgerald (1996) stated that Holland’s theory logically and simply accounts for vocational behavior but fails to explain why people develop into certain types. In the third edition of *Career Choice and Development*, the authors stated that Holland’s theory was the most influential in the field of career theory (Brown & Brooks, 1996). In the fourth edition of this book, Brown (2002) wrote of some reservations he had about Holland’s instruments due to their perceived lack of cultural sensitivity. Some reviewers of the SDS believed that Holland was ahead of the curve in emphasizing clients as active participants in shaping their careers rather than passive participants (Borgen, 1991; Spokane, 1990).

There has been some debate about the use of raw scores in determining a person’s three-letter code on the SDS (Daniels, 1994; Prediger, 1981). Some have stated that the use of normed referenced scores could aid in creating a more gender and age friendly SDS interpretation. Yet, Holland, Fritzsche, and Powell (1994) defended the use of raw scores by saying that a fair inventory uses one form for both sexes and claims that experimental tests have shown that the SDS works equally well for men and women.

**Conclusion.** Holland’s theory has its critics. Yet, the theory has been far from abandoned. Research still thrives in this area. Because of the great utility of Holland’s theory and the SDS, it is the appropriate perspective to explore the proposed research. One area that is highly researched in relation to Holland’s RIASEC model is its relation to personality variables. The FFM as operationalized by the NEO instruments is the personality model most commonly used in this type of research. This body of research is not analogous to this study. Yet, it shows the curiosity that many researchers have in how vocational interests and personality may be related. Therefore, this literature is presented in the next section.

*Personality and Interests: The Literature Linking Holland’s Theory and the Five-Factor Model*

Holland (1997) is known for his support of the idea that vocational interests and personality are linked. Holland speaks of the RIASEC types mostly as personality types rather than specifically types of vocational interest. The first test of how much Holland’s RIASEC was a set of personality types was presented in an article by Costa, McCrae, and Holland (1984), the authors of one of the most widely used assessments of personality and interest. They found a substantial amount of overlap between the six interest domains and the five personality domains, and this has spurred a flurry of research in the past 20 years.
Theories or assessments of personality and interest other than Holland’s (1997) or Costa and McCrae’s (1992) have also been researched (Tokar & Fischer, 1998; Lindley & Borgen, 2000; Staggs, Larson, Borgen, 2003). Some of these have examined employment variables (De Fruyt & Mervielde, 1999). However, little research has examined the relationship among the five factors of personality and the interest secondary constructs, which this study addressed.

The meta-analysis. In 2002, Larson, Rottinghaus, and Borgen conducted a meta-analysis of 12 studies that explored Holland’s theory of personality and the five-factor model as operationalized by Costa and McCrae. These authors believed it was time to analyze the totality of the research in this area. They stated that most of the studies conducted had produced fairly significant results but none had taken the time to see what the full body of research had to say about the linkage between the interest and personality domains within an individual. In this section, the finding of Larson, Rottinghaus, and Borgen (2002) is explored. Some of the specific studies cited in their meta-analysis are reviewed, as well as other studies not included in their meta-analysis.

Larson, Rottinghaus, and Borgen (2002) found five substantial and expected correlations for men and women among the interest and personality domains. Across these 12 studies the following expected correlations were significant: 1) Artistic–Openness ($r = .48$); 2) Enterprising–Extraversion ($r = .41$); 3) Social–Extraversion ($r = .31$); 4) Investigative–Openness ($r = .28$); and 5) Social–Agreeableness ($r = .19$). They also found four correlations which they deemed unexpected. These correlations were 1) Conventional–Conscientiousness ($r = .29$); 2) Enterprising–Conscientiousness ($r = .29$); 3) Enterprising–Neuroticism ($r = .24$); and 4) Social–Openness ($r = .22$).

As is typical of most studies conducted in this area, the expected correlations were highlighted as consistent with Holland’s hypotheses and the unexpected correlations not overly elaborated upon. Yet, the unexpected correlations did not seem to run completely contrary to Holland’s descriptions of the RIASEC types (e.g., those with Conventional preferences would likely be conscientious, and Social individuals would commonly be open).

An overview of relevant studies. The significant correlations found in studies that explored the relationship between Holland’s RIASEC types and the five-factor model are presented in Table 1. This table shows how many correlations were consistent across studies.
Other correlations only appear in one or a few studies. This is assumed to be an artifact of the varying methodology and sampling procedure applied in the different studies.

Points from the literature. An interesting aspect of many of these articles is the way in which statistical findings were reported. Many of the authors seemed to highlight in the narrative those significant correlations that fit with Holland’s theory and de-emphasized the significant correlations that did not fit. For example, Holland, Johnston, and Asama (1994) found that the Enterprising interest preference was correlated with Extraversion for men (.41) and women (.51). The authors stated this fact in their results section narrative. Holland (1997) characterized a person with an Enterprising interest preference as sociable, optimistic, excitement seeking, assertive, enthusiastic, and extroverted. To further emphasize how well Extraversion fits with Holland’s concept of Enterprising, Costa and McCrae (1992) described a person scoring high in Extraversion as sociable, assertive, excitement seeking, talkative, active, and optimistic. This significant correlation between Enterprising and Extraversion fits with Holland’s description of an Enterprising individual.

In the same study (Holland, Johnston, and Asama, 1994), Extraversion was also significantly correlated with Realistic men (.27) and Conventional men (.19). These significant correlations do not seem to fit with Holland’s descriptions of Realistic and Conventional individuals. The authors characterized many of the significant correlations as “either insignificant, small, or ambiguous” (p. 335). Holland (1997) characterized a person with a Realistic interest preference as reserved, conforming, and inflexible. He characterized a person with a Conventional interest preference as inhibited, conforming, and careful. These definitions do not seem to conjure visions of the person fitting Costa and McCrae’s definition of Extraversion. Although the correlations between Extraversion and Realistic and Conventional are smaller than those of Enterprising, they are all statistically significant. In interpreting research findings, it is apparent that authors have dismissed some significant correlations because they do not confirm the theoretical assumptions.

Hogan and Blake (1999) conducted a review of the vocational interests and personality literature. These authors made an interesting point about the conclusions of many of the articles they reviewed (which is also true of many of the articles mentioned in this paper). They stated that most of the findings of the research looking at the relationship between personality and interest were consistent. The interesting part was that some of the authors of their respective
### Table 1

Correlations Among the NEO’s Five Personality Factors and Holland’s Six Interest Domains across Ten Studies

<table>
<thead>
<tr>
<th>FFM Dimension</th>
<th>N</th>
<th>E</th>
<th>O</th>
<th>A</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Studies with Significant correlations for Men</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Costa, McCrae, &amp; Holland (1984) N=217; Adults</td>
<td>-I, S, E</td>
<td></td>
<td>A, -C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tokar, Vaux, &amp; Swanson (1995) N=91; College Students</td>
<td>R, A, S, E</td>
<td></td>
<td>I, A, S</td>
<td></td>
<td>-A</td>
</tr>
<tr>
<td>Careless (1999) N = 48; Adults</td>
<td>-S</td>
<td>S, E</td>
<td></td>
<td>A, S</td>
<td></td>
</tr>
</tbody>
</table>

*Studies with Significant correlations for Women* |     |     |     |     |     |

| Costa, McCrae, & Holland (1984) N=144; Adults |     |     | A, I, -C |     |     |

*Studies with Significant correlations for Men and Women* |     |     |     |     |     |

| Fritzche, McIntire, & Yost (2002) N= 455; College Students |     |     |     | I, S | I, S |
| Sullivan & Hansen (2004) N=217; College Students | S, E |     | A | S   |

* not used in the Larson, Rottinghaus, and Borgen (2002) meta-analysis
- indicates an inverse relationship
articles concluded that these moderate correlations were evidence for the hypothesized underlying link between personality and interest. Others concluded that these same moderate correlations in their respective studies showed that these two domains, interests and personality, were fundamentally separate. A quick read of the discussion sections of the articles found in Table 1 would support these observations of Hogan and Blake (1999).

Sullivan and Hansen (2004) took a different approach to exploring the relationship between interests and personality than most of the other studies cited. These authors hypothesized relationships among certain facet scores of the NEO-FFI, Holland’s RIASEC types, and the SII Basic Interest Scales (Hansen & Campbell, 1985). They hypothesized that some of the facet scores on the NEO-FFI would account for the correlations found in previous studies between big five factors and Holland codes. Such hypotheses included that the Warmth facet would account for the associations between Social and Extraversion and the Assertiveness facet would account for the majority of the association between Enterprising and Extraversion. Both of these hypotheses were supported in their analysis. Sullivan and Hansen’s work opened a new avenue for research in the area of interest and personality. Their work showed that the relationship among constructs included in Holland’s theory, such as interest profile elevation, could potentially be best explained through relationships with the NEO facet scales.

Gaps in personality and vocational interest research. The research examining the relationship among the RIASEC types and the five factors from the NEO has provided a long and active history related to vocational interests and personality. These studies may not be directly related to the hypotheses of this research. Yet, they provide a history and a background concerning the relationship among these constructs that many have sought to better understand. Even Holland, Johnston, and Asama (1994) conducted an analysis regarding profile elevation as a last minute decision in their article. Their article’s main purpose was exploring the relationship between the RIASEC and the NEO. The gap in personality and vocational interest research comes in that more researchers are not making this leap and looking at the interpretability of interest profile elevation in relation to personality. Many researchers have stopped at the RIASEC/NEO level. This study went deeper within vocational interest constructs by exploring interest profile elevation and interest secondary constructs.

Conclusion. It appears that the domains of personality and vocational interest share some variance. The level of this shared variance would not lead one to believe that a measure of one
may substitute for another. The largest leap made, based on the data, is that in some areas personality and vocational interests are measuring the same underlying tendencies of a person but in most areas they are not. In both the discussion of Holland’s (1997) RIASEC model and Costa and McCrae’s (1992) operationalization of the five-factor model, there is evidence neither of the models purports to cover the breadth and depth of the construct of personality or vocational interest (McCrae & John, 1992; McAdams, 1992; Daniels, 1994; Prediger, 1981).

There is the possibility that if the constructs of personality and vocational interest were more validly and more accurately theorized and measured than they are currently, they may share more variance than demonstrated in previous research. Yet, there is the possibility they share less variance when more accurately defined and measured. Based on the best evidence currently available, it is concluded that vocational interests and personality share a moderate level of variance in some specific domains. One of the purposes of this study was to explore some of these specific domains by looking at how personality may be related to different aspects of Holland’s vocational interest theory than previously considered. This study explored how personality may be related to his secondary constructs and interest profile elevation.

**Secondary Constructs of the SDS**

The theory and the SDS utilize secondary constructs that are meant to moderate predictions about a person or environment based on the Holland code received. The secondary constructs focused on in this study included consistency, differentiation, congruence, and coherence. One of the purposes of this research was to understand the utility of interest profile elevation as another contributing secondary construct when interpreting the Self-Directed Search. A discussion specific to this construct will be included in a later section of this paper.

**Definitions**

Consistency as broadly defined is “the degree of relatedness between personality types or between environmental models” (Holland, 1997, p. 4). As it is operationalized on the SDS, consistency of a person’s three-letter code is determined by how close the first two letters of that code are on the hexagon. Strahan (1987) presented a method for calculating consistency based on a two- or three-point code. A highly consistent code would be one in which the letters are next to one another on the hexagon (i.e., RI). A code with low consistency would be one in which the first two letters of the code are opposite one another on the hexagon (i.e., RS) (Reardon & Lenz, 1998).
Differentiation is defined as “the level of definition or distinctness of a personality profile” (Reardon & Lenz, 1998, p. 262). In other words, a person who closely resembles the definition of one type is highly differentiated. Yet, if a person equally resembles all six RIASEC types, they are not well differentiated in their interest pattern or personality. Differentiation is commonly calculated by subtracting the lowest summary score from the highest (Holland, 1997) or by using the Iachan index (Iachan, 1984). Yet, it has been calculated in a variety of ways as researchers have explored its usefulness (Frantz & Walsh, 1972; Monahan, 1987; Spokane & Walsh, 1978). The Iachan index takes into account the first, second, and fourth summary scores when calculating differentiation. It is considered to be more sensitive to the shape of the profile (Holland, Powell, & Fritzsche, 1994). Alvi, Khan, and Kirkwood (1990) stated that the Iachan index should be used for most purposes.

Congruence broadly defined is the degree of match between a person and an environment. For instance, an Investigative person working in an Investigative environment would have a high level of congruence. Congruence on the SDS is calculated by the degree of match between a person’s assessed and expressed interests. In other words, what is the level of agreement between code derived from the occupational aspirations portion of the SDS and the code from the rating portion of the SDS? An exact match between the two codes would be interpreted as a high level of congruence (Reardon & Lenz, 1998). As with most of the other secondary constructs, there are various definitions and ways of calculating congruence. Young, Tokar, and Subich (1998) identified more than 15 of these.

Coherence of aspirations is determined by examining the daydreams occupations to see if the same RIASEC letter appears first in the first three occupational codes. High coherence may indicate future persistence in occupations with the same first code letter as that of the first aspiration (Reardon & Lenz, 1998).

Relevant Research

The secondary constructs are one of the most researched aspects of Holland’s theory. Researchers appear to be trying to determine exactly what the contribution of these constructs may be. There is some confusion in trying to review the literature on this topic. This confusion stems from the lack of uniformity in how the secondary constructs are defined. When information from the literature is presented in this paper, the meaning of the secondary
constructs will be the same as the definitions presented earlier. It will be specified when the
definition differs.

The exact research question in this study has yet to be explored in prior research. Findings
more closely relevant to the idea of how the secondary constructs relate to interest profile
elevation are not available. Researchers have conducted some studies looking at personality
variables in relation to interest secondary constructs (Nafziger, Holland, and Gottfredson, 1975).
These studies will be highlighted.

A summary of findings related to interest secondary constructs are presented in Table 2. It
is obvious from looking at Table 2 that many variables have been explored in relation to interest
secondary constructs. There is no overall meta-analysis to serve as a guide in looking at the
research. Such a study would be a great contribution to these often researched constructs.

As shown in Table 2 consistency is related to stability of career choice (Villwock,
Schnitzen, & Carbonari, 1976), persistence in college, college GPA (Wiley & Magoon, 1982),
employment stability (Gottfredson & Lipstein, 1975), ability to choose field of interest, and
similarity between interest and chosen field (Holland, Gottfredson, & Nafziger, 1975).

Table 2 shows differentiation is significantly related to information seeking (Miller, 1982),
aacademic aptitude (O’Neil, 1977), higher English and social science scores (Erwin, 1987), ability
to choose field of interest, and similarity between interests and chosen field (Holland,

According to Table 2, coherence is significantly related to current job, graduate major,
career plans (O’Neil, Magoon, & Tracey, 1978), and prediction of vocational choice (Holland,

The information in Table 2 indicates congruence is related to stability of career choice
(Villwock, Schnitzen, & Carbonari, 1976), organizational commitment (Pazy & Zin, 1987),
academic achievement, and satisfaction with college (Allen, 1996; Nafziger, Holland, &
Gottfredson, 1975). The table also indicates that congruence is related to satisfaction. Meir
(1995) reported on two meta-analyses conducted on congruence and satisfaction. A statistically
significant relationship between congruence and satisfaction (R = .20) was found in these studies
(Assouline & Meir, 1987; Tranberg, Slane, & Ekeberg, 1993).
Studies Found in Table 2

This section will highlight the studies found in Table 2 and include a discussion of the statistically significant and nonsignificant findings of each study. Villwock, Schnitzen, and Carbonari (1976) tested Holland’s assertion that stability of vocational choice can be predicted from the SDS secondary constructs of congruence, differentiation, and consistency. Part of this assertion by Holland is that the prediction of vocational choice is best when all three of these secondary constructs are used. A sample of college students was used in this study, and their vocational choice was defined as their college major. It was found that Holland’s theory held true in regards to the predictive power of consistency and congruence. Yet, differentiation did not improve the prediction power.

Pazy and Zin (1987) did not find consistency to be significantly related to organizational commitment. Nafziger, Holland, and Gottfredson (1975) found congruence to be related to college satisfaction but did not find the same relationship for consistency and differentiation.

Holland, Gottfredson, and Baker (1990) conducted an extensive study related to the secondary constructs. As stated earlier, they found coherence could significantly predict vocational choice in a sample of Navy recruits. They also administered the NEO-PI and hypothesized that coherence would be negatively related to Neuroticism. They did not find that coherence had a significant relationship to any NEO personality variables. Yet, this is one of the few studies to explore the relationship between interest secondary constructs and personality as operationalized by the NEO.

Studies Not Found in Table 2

Some relevant studies were not included in Table 2 due to an alternative way of defining a secondary construct or lack of any significant findings. Therefore, the findings of these studies will be presented in this section.

Frantz and Walsh (1972) explored the secondary constructs of congruence, consistency, and differentiation in a sample of graduate students. None of the secondary constructs had a significant relationship to satisfaction and achievement; however, those participants who had congruent, consistent, and differentiated profiles tended to be more satisfied and have higher achievement. Allen (1996) did find a significant relationship between congruence, academic satisfaction and achievement in a sample of 45 music therapy majors. Yet, similarly to Frantz
Table 2

Correlates of Secondary Constructs

<table>
<thead>
<tr>
<th>Variables associated with the Secondary Constructs</th>
<th>Consistency</th>
<th>Differentiation</th>
<th>Coherence</th>
<th>Congruence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Seeking</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stability of Career Choice</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Organizational Commitment</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Persistence in College</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College GPA</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Academic Aptitude</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Higher English and Social Science Scores</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Job, Graduate Major, Career Plans</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Satisfaction with College</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Ability to choose fields of interest and similarity between interest and current chosen field</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prediction of Vocational Choice</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Employment Stability</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

* X’s are used to indicate that positive relationships were found between these constructs.

and Walsh (1972), no significance was found for consistency and differentiation. Ohler, Levinson, and Hays (1996) explored the relationship among consistency, congruence, differentiation and career maturity. They found no significant relationship in their sample of university students with and without learning disabilities.

Barak and Rabbi (1982) tested Holland’s consistency hypothesis, and found that some of the studies that showed a lack of support for the consistency hypothesis were due to the dependant measures used (i.e., SDS, VPI). Barak and Rabbi used persistence in a college major from entering college to graduation as their independent measure. They calculated consistency by asking entering freshman to indicate two majors of interest to them. The Holland code of
these two choices was assigned, and the consistency of the first two letters of those codes was calculated. They found persistence in college (.31), educational stability (.23), and achievement in college (.44) was statistically significantly related to consistency. Latona (1989) determined consistency scores for a sample of 3,612 college seniors based on their results from the ACT Interest Inventory and the World-of-Work map. Latona did not find a relationship between consistency and persistence in college major.

Monahan (1987) looked at differentiation in relation to identity and Occupational Alternatives Questionnaire results. Monahan calculated differentiation in various ways. The author found no relationship between it and the variables explored. There have been studies exploring the relationship of differentiation with psychological adjustment or proneness to psychosis. No relationship has been found among these constructs (Buboltz & Woller, 1998; Poreh & Schullen, 1998). Leung, Coneley, Scheel, and Sonnenberg (1992) calculated the consistency and differentiation scores of their sample in three different ways. Their hypothesis that these secondary constructs would have a relationship with vocational identity was not supported by any of the methods of consistency and differentiation calculation. Finally, Fouad and Mohler (2004) explored possible differences in consistency and differentiation of Holland codes across five racial/ethnic groups. They found no significant differences in regard to these variables in a sample of 750 career clients and students that were administered the Strong Interest Inventory.

Schaefer (1976) found no significant relationship between congruence and mental ability and achievement. Bates, Parker, and McCoy (1970) explored the relationship congruence and consistency may have with satisfaction in a small sample of vocational rehabilitation patients with psychological disabilities. They found no significant relationships.

There has been much research in recent years looking at the Holland’s concept of congruence. Most of this research has defined congruence in terms of person-environment congruence rather than the definition presented in this paper. Arnold (2004) outlined a critique of person-environment congruence and relates reasons why the research regarding this construct is inconsistent. An article by Chartrand and Walsh (1999) seemed to support this idea that the congruence construct tested well. In 1999 and 2000, several volumes of the *Journal of Vocational Behavior* explored the idea of person-environment congruence and its usefulness.
Many differing opinions were expressed (Chartrand & Walsh, 1999; Spokane, Meir, & Catalano, 2000; Tinsley, 2000a; Tinsley, 2000b)

Kieffer, Schinka, and Curtiss (2004) explored the variables of personality and interest secondary constructs in a sample of 514 employees of a large company. The study examined the contributions of the Five Factor Model and Holland’s constructs of consistency, differentiation, and person-environment congruence. They found that person-environment congruence relates (.13) to the Agreeableness factor on the NEO-PI-R. Furnham, Toop, Lewis, and Fisher (1995) used a sample of managers and non-managers from eleven companies in Great Britain, and found there was more person-environment congruence and satisfaction among managers than non-managers.

As can be seen from the presentation of the significant and non-significant findings, there are some conflicts. Depending on how the authors measured achievement and satisfaction (Bates, Parker, & McCoy, 1970; Erwin, 1987; Frantz & Walsh, 1972; Nafziger, Holland, & Gottfredson, 1975; O’Neil, 1977; Wiley & Magoon, 1982), the results seemed to vary.

Gaps in the Research on Interest Secondary Constructs

Holland, Gottfredson, and Baker (1990) and Kieffer, Schinka, and Curtiss (2004) have been the only researchers to explore the relationship that secondary constructs may have with personality. When they looked at coherence’s relationship with NEO personality variables, they either found no relationship or a modest one with Agreeableness. Yet, they did introduce the idea that exploration of the contribution of secondary constructs can include personality variables. As will be thoroughly presented in the Interest Profile Elevation section, Swanson and Hansen (1986) explored the differentiation in persons with high and low profile elevations. This opened the idea that there may be some value in looking at the exact relationship that this newer construct, interest profile elevation, may have with the established interest secondary constructs.

Conclusion: Consistency, Differentiation, Congruence, and Coherence

Researchers still seem to be looking for strong empirical evidence of the exact contribution of the secondary constructs. As the review of the literature has shown, the secondary constructs have been found to have statistically significant relationships with some variables important to career decision making. Hopefully, a look at the secondary constructs in relation to interest profile elevation and personality will add to the understanding of these constructs that have become important in the practice of career counseling.
All of the secondary constructs discussed are stability indicators of a person’s interests. As stated earlier, the secondary constructs are interpreted in order to moderate the counselor’s assumptions about a client based on the client’s three-letter code. If a client’s SDS profile is low in the secondary constructs, it calls for a modification in the intervention by the counselor. A client with low scores in the secondary constructs would not typify the personality traits associated with the RIASEC types and the three-letter code would be a less accurate personality description.

It is important to understand what these secondary constructs predict. Every day, counselors use secondary constructs to interpret clients’ profiles on the SDS and to tailor interventions accordingly. It cannot be assumed that these secondary constructs provide accurate or useful information about the client. Empirical research must demonstrate the intricacies of what should and should not be assumed about clients based on their secondary construct scores.

With limited funding and time, it is important that all possible accurate information be gleaned from an SDS profile, and that it is understood and used to promote career exploration and decision making. This leads to a discussion on interest profile elevation. Although interest profile elevation has long been considered in interpreting SDS profiles, it has never been accurately understood (Fuller, Holland, & Johnston, 1999). It may provide us with information about a client that cannot be seen in his or her summary score or within the interpretation of the other secondary constructs.

**Interest Profile Elevation**

*Definition*

Interest profile elevation is the sum of the six section scores on the SDS. Career counselors have long interpreted the interest profile elevation of the SDS under the umbrella of a counselor’s judgment, but researchers have never completely validated its interpretability (Fuller, Holland, & Johnston, 1999). Counselors often notice when a client does not endorse many of the items in the rating section of the SDS. They often draw conclusions about a client’s personality or interest structure based on this observation. The following review of the literature examines the extent to which counselors can make assumptions or guide their interventions based on interest profile elevation of the Self-Directed Search.
Relevant Research

Researchers speculated that interest profile elevation was related to vocational interest and personality factors. Speculation about constructs like interest profile elevation began early on. Berdie (1943) used the Strong blank to look at the numbers of likes and dislikes. He found this construct to be moderately related to some personality variables, school achievement, and morale. Berdie speculated that the extent of likes or dislikes might be related to vocational interest. Cronbach and Gleser (1953) noted that it was important to address the question of whether differences in elevation are relevant to interest. They stated one should not disregard elevation unless researchers could conclude that it is irrelevant to interest.

Spokane, Luchetta, and Richwine (2002) noted, “the possibility of a relationship between depression and interest profile elevation has been discussed for years” (Brown, 2002, p. 402). In addition, Gottfredson and Jones (1993) also indicated that the idea of interest profile elevation has been subsumed under the umbrella concept of professional judgment of a counselor when interpreting the SDS profile of a client. Counselors have reported interpreting interest profile elevation to determine whether a client was depressed or overzealous. Gottfredson and Jones stated counselors have been interpreting this based on an intuitive understanding of the instruments and not a research-validated understanding.

Gottfredson and Jones (1993) examined interest profile elevation of the Vocational Preference Inventory (VPI; Holland, 1985) and the Self-Directed Search with a sample of middle school students, high school students, navy recruits, and bank tellers. They concluded that high interest profile elevation reflected an expressive, enthusiastic, or impulsive general style and that low interest profile elevation reflected the opposite.

Holland, Johnston, and Asama (1994) looked at the relationship between interest profile elevation, the NEO PI/FFI, and the Personality Styles Inventory (PSI) in an unemployed adult sample. They hypothesized that interest profile elevation would be positively related to Extroversion and Openness. They also hypothesized it would be negatively related to Neuroticism. Their predictions were correct for Extroversion and Openness and correct with regards to Neuroticism for men.

Fuller, Holland, and Johnston (1999) utilized a sample of over 300 dislocated workers in Missouri to determine if personality differences existed between those with high and low interest profile elevations on the Self-Directed Search. Their results showed a relationship between
interest profile elevation and openness to experience, extraversion, and lower depressive personality traits. For instance, a client with significantly high interest profile elevation would be more willing to consider options presented to him or her, be more open and willing to collaborate in discussions of options, and less likely to exhibit signs of depression. This would likely create a more conducive environment for career counseling.

Swanson and Hansen (1986) considered the interpretation of interest profile elevation important based on the following conclusions of their research: (1) high undifferentiated profiles resembled consistent profiles more so than low undifferentiated profiles, (2) interest profile elevation was positively correlated with effective educational functioning and achievement (e.g., higher grades, likelihood to persist in college), and (3) the SCII was more predictive of college majors for high profile individuals as compared to low profile individuals. Many of these findings seem to be similar to the findings regarding consistency by Barak and Rabbi (1982).

The specific correlations among interest profile elevation and other constructs are depicted in Table 3. The findings from Swanson and Hansen (1986) are not included. This is due to the different way in which they conducted their analysis. The specifics of their analysis will be addressed in a later section of this review.

Darcy and Tracey (2003) examined the areas of interest and ability as they relate to career development. They spoke of a general factor in vocational assessment on which interest profile elevation has a clear impact. The authors talk of this general factor of interest in the same

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<tr>
<td>Control</td>
<td>W, -.46; M, -.34</td>
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Table 3

Correlations Among Interest Profile Elevation and Other Variables Across Three Studies
Table 3 Continued

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<td><strong>Significant Correlations</strong></td>
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<tr>
<td>Status</td>
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<td>Acquiescence</td>
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<td>Neuroticism</td>
<td>W, -.17</td>
<td>M, -.37</td>
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</tr>
<tr>
<td>Extraversion</td>
<td>M, .19</td>
<td>W, .30; M, .33</td>
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<td>W, .23</td>
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<tr>
<td>Narcissism</td>
<td>W, .20</td>
<td>W, .29; M, .17</td>
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</tr>
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<td>W, -.27; M, -.24</td>
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<tr>
<td>Paranoia</td>
<td>M, -.16</td>
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</table>

- W = women; M = Men

manner as Spearman’s concept of “g” in intelligence. In intelligence theory, “g” represents the general factor of intelligence. Many scholars agree intelligence may be multifaceted but still adhere to the general theory of intelligence (Sattler, 2001). Darcy and Tracey proposed that interest profile elevation might serve as an overarching or general factor of vocational interest.

Prediger (1998) conducted an expansive study (N = 53,429) to investigate interest profile elevation. He refered to interest profile elevation as profile level. Despite the assumption many career counselors make, his findings indicated that there was no relationship between profile level and interest. In other words, a person with a high interest profile elevation and a high point code of E on the Self-Directed Search would not have a greater likelihood of entering an E occupation than a person with low interest profile elevation and a high point code of E on the
SDS. Although this finding is surprising and contrary to most counselor assumptions, it does not mean that other important, interpretable variables are not related to interest profile elevation.

L. S. Gottfredson (2002) described five niche development principles meant to explain why some people are more likely than others to find congruent life niches. One principle is referred to as the “Temperament or personality as a major internal factor governing the subset of experiences actually available to us” (p. 127). In explaining this principle, Gottfredson stated “Individuals who are more active, imaginative, self-confident, or ‘open to experience’ (one of the big five personality dimensions) tend to sample more of the possible experience that a culture provides. Individuals who are chronically passive, pessimistic, or fearful or who for other reasons have less taste for exploring, experimenting, and deviating from the crowd will end up sampling less of what life offers and of what they could be” (p. 127). These descriptions Gottfredson presented are similar to descriptors of high and low interest profile elevation individuals. It appears that Gottfredson is noticing a difference in personality and behavior in how some persons engage career options.

Darcy and Tracey (2003) identified a need for expansion on the interest profile elevation literature as it relates to the RIASEC types. These authors indicated a more in-depth study of interest profile elevation may reveal whether it is related to the general interest factor. They stated interest profile elevation may “bias the relations with other variables or be related to other variables in a substantive manner” (p. 227). These statements lead one to speculate that interest profile elevation may not just be another interpretable secondary construct but a superordinate construct that accounts for much of the variance in SDS profiles.

**Difference Between Interest Profile Elevation and Differentiation**

Some literature has shown the importance of understanding the difference in using and interpreting the concept of interest profile elevation and differentiation. These two concepts are highly related, but not equivalent. Interpretation of a client’s SDS interest profile elevation provides some distinct information to a counselor that is not provided by the interpretation of the differentiation score on a client’s SDS profile. Interest profile elevation is the sum of the six section scores on the instrument (Fuller, Holland, & Johnston, 1999), whereas, differentiation is defined as the level of definition or distinctness of a profile (Holland, 1997). Differentiation can simply be thought of as the difference between a client’s highest and lowest summary scale score on the SDS. SDS interest profile elevation level can be the same for both a differentiated and
undifferentiated profile. In addition, low interest profile elevation is not synonymous with low differentiation.

In a study of the “custom of treating all undifferentiated subjects as if they were equal” (p. 163), Swanson and Hansen (1986) emphasized the importance of not grouping those with low and undifferentiated Strong-Campbell Interest Inventory (SCII) profiles and high and undifferentiated SCII profiles into the same category. They held that it was important to consider the interest profile elevation, whether high or low, when interpreting the results of the client’s SCII.

The important interpretive differences between differentiation and interest profile elevation are illustrated in Figure 1. The graph plots three different SDS profiles. All three profiles have a high point code of SEA. Both the low interest profile elevation and low differentiation profile (diamond), as well as the low interest profile elevation and high differentiation profile (square) have a interest profile elevation of 67. While the high interest profile elevation, low differentiation profile (triangle) has an interest profile elevation of 212. The graph shows that interest profile elevation level can be the same for both a differentiated and undifferentiated profile. In addition, low interest profile elevation is not synonymous with low differentiation, and high interest profile elevation is not synonymous with a multi-potential individual because the interest profile elevation may be high but the profile may not be undifferentiated or flat.

![Figure 1](Variations on Profile Elevation and Differentiation for an SEA Code)
There are four main studies that have looked at variables related to interest profile elevation. These studies include Swanson and Hansen (1986), Gottfredson and Jones (1993), Holland, Johnston, and Asama (1994), and Fuller, Holland, and Johnston (1999). This section will explore some of the strengths and weaknesses within these studies, including gaps in the current scientific knowledge regarding interest profile elevation.

Swanson and Hansen (1986) took on an important task of exploring the idea of whether college students with undifferentiated profiles on the Strong-Campbell Interest Inventory (SCII) should all be counseled in the same way. They tested and surveyed 615 college students. Of these 615 students, 158 had undifferentiated SCII profiles. They formed quartiles out of these student’s SCII undifferentiated profiles and conducted their analysis on those students falling into the low (37 participants) and high (45 participants) quartiles.

From this explanation of the study, it is obvious that Swanson and Hansen looked at only a small sample of students with undifferentiated profiles on an older version of a vocational interest assessment. They also were unable to benefit from the more precise measurement of differentiation developed by Iachan (1984), and they determined the undifferentiated profiles on the basis of whether the student’s differentiation level fell into the lowest quartile of this sample. Therefore, the full picture of neither interest profile elevation nor differentiation was examined in this study. Yet, Swanson and Hansen (1986) did explore the relationship among differentiation, consistency, and congruence. They found that consistency was significantly higher among high, undifferentiated profiles.

Gottfredson and Jones (1993) sought to better understand the concept of interest profile elevation and utilized the Vocational Preference Inventory (VPI), the Self-Directed Search, and two differentiation indices (i.e., highest minus lowest score and Iachan differentiation). Their samples consisted of middle school students, high school students, navy recruits, and bank tellers. For their sample of high school students, interest profile elevation was defined as the sum of scores for the two sets of self-estimates on the SDS. Interest profile elevation in the other samples was determined as it is defined in this study (i.e., the sum of the six section scores on the SDS or VPI). The Navy recruit sample was also administered the NEO-PI-R.

The findings of the Gottfredson and Jones (1993) study are summarized in Table 3. Notably, they found that for women interest profile elevation was negatively related to
Neuroticism. They also found that for men, interest profile elevation was positively related to Extraversion, Openness, Agreeableness, and Conscientiousness. They also found a positive relationship between interest profile elevation and differentiation high-low and a negative relationship between interest profile elevation and differentiation Iachan. These findings help to form a basis for the purpose of continuing study in the areas of how interest profile elevation relates to personality and two measures of differentiation.

Gottfredson and Jones (1993) did not get an accurate measure of interest profile elevation for the sample of high school students. Nor did they explore the correlates of interest profile elevation among a sample of college students. These researchers added greatly to the literature regarding interest profile elevation because of the large number of possible correlates they explored among several different samples. Yet, it is hard to equate all of their findings among samples because of the different instruments used, differing interest profile elevation definitions, and lack of consistency on the types of correlates explored.

Holland, Johnston, and Asama’s (1994) explored the relationship among the RIASEC types and the five NEO factors. Their analysis regarding profile elevation was an “afterthought (p. 338).” Perhaps the authors’ discussion of their findings (See Table 3) should be more tentative given the magnitude of their correlations and gender differences in their results. Also, their sample seems very similar to the one used in the Fuller et al. (1999) study.

Fuller, Holland, and Johnston (1999) looked at the relationship between interest profile elevation on the 1985 version of the SDS and the NEO factors in a sample of 319 dislocated workers in Missouri that attended a career workshop. The authors divided the interest profile elevation scores into quartiles. They attempted to determine if there were linear, quadratic, and cubic relationships among the variables mentioned. They found for men there was a linear relationship between interest profile elevation and Neuroticism, Extraversion, and Openness. There was also a quadratic relationship for Extraversion. For women, they found a linear relationship for Extroversion and Openness. In addition, there was a quadratic relationship for Openness.

The four studies that have attempted to look at the relationship among interest profile elevation and personality have provided some contributions to this domain of research. Yet, none have covered the domain to the satisfaction of this author. Swanson and Hansen (1986) used what is now an out-dated assessment tool with their college-student sample and their definition
of interest profile elevation was confounded with undifferentiation. Gottfredson and Jones (1993) looked at the relationship that interest profile elevation may have with a variety of variables including personality and interest secondary constructs, but they did not sample college students. In their most similar sample, high school students, they did not get an accurate measure of interest profile elevation. Fuller, Holland, and Johnston (1999) conducted a well designed study but did not explore interest secondary constructs or include a sample of college students.

**Conclusion: Interest Profile Elevation**

The discussion of interest profile elevation reveals some important, interpretable aspects of the construct. It could provide counselors with a wealth of information about clients that would help them to tailor interventions early in the counseling relationship. How interest profile elevation can work in conjunction with other secondary constructs was demonstrated in the discussion of interest profile elevation and differentiation. This showed that the interpretation of firmly established secondary constructs could be enhanced through a better understanding of interest profile elevation.

**Gaps Summarized**

Many issues have been presented in the previous sections related to the current research on this topic. The choice to look at the Five Factor Model of personality and Holland’s theory of vocational interests in regard to these research questions derives from the previous attention that has been given to the relation between these theories’ constructs. More research has been conducted with regards to these two theories than any other combination of personality and vocational theories. Yet, much less research has addressed the relationships among interest profile elevation, interest secondary constructs, and the five factors of personality. As detailed in the interest profile elevation gaps section, no previous research has looked at all of these variables at one time in a sample of college students. Analyzing these variables in this way has the potential to greatly add to the science and literature in this area.

**Summary**

Holland’s RIASEC theory is a widely utilized theory that helps career counselors in their work and has led to the development of many instruments. Despite the criticisms and limitations reported in the literature, most agree that it is highly valuable to counselors and clients. Due to limitations in most counseling sessions, it is important that all information from these instruments be extracted and used to inform counselor interventions. The literature presented in
this section attempts to relate the information that can and cannot be provided when utilizing Holland’s theory, interest profile elevation, and the secondary constructs in interpretation of the SDS. Because of the research tradition between Holland’s (1997) theory and Costa and McCrae’s (1992) theory of personality, much of the information relayed in this chapter has spoken to the relationship between the constructs of these theories.

The concept of interest profile elevation was explored and the level to which it may inform the interpretation of an SDS profile and career counseling was discussed. In practice, a counselor may see only good signs in a client’s SDS score; however, the client is still unable to move forward in career decision making. The scores on differentiation, consistency, congruence, and coherence may all be high and positive. Yet, with a closer look, it is discovered that interest profile elevation is low. With the growing research on all of Holland’s theory and interest profile elevation, a counselor will be able to look to the interpretability of client’s low interest profile elevation for some possible answers as to why this client is unable to move forward in decision making.
CHAPTER III
METHODOLOGY

This study sought to further establish the presence and strength of relationships among interest profile elevation, interest secondary constructs, and personality. In addition, the study attempted to determine if there were common profiles among the individuals in the sample based on the variables of the study. The variables interest profile elevation and the interest secondary constructs were measured by the vocational interest assessment, the Self-Directed Search (SDS; Holland, Fritzche, & Powell, 1994). The personality variables were measured with the NEO-FFI (Costa & McCrae, 1992). Specific procedures to investigate these relationships are described in this chapter, including hypotheses related to the research question, population, sample, research design, operationalization of variables, instrumentation, procedures, and analysis of data.

General Question of Interest

The general question addressed in this study was: In a sample of college students enrolled in an introductory career development course, what is the relationship among interest profile elevation, personality, and interest secondary constructs?

Hypotheses

After considering the literature review in Chapter II, the following hypotheses were proposed.

a) There is a positive relationship between interest profile elevation and Openness.
b) There is a negative relationship between interest profile elevation and Neuroticism.
c) There is no relationship between interest profile elevation and Conscientiousness, Extroversion, or Agreeableness.
d) There will be a positive relationship between interest profile elevation and consistency.
e) There will be no relationship between interest profile elevation and differentiation, congruence, or coherence.

f) There will be no relationship between personality (Openness, Conscientiousness, Extroversion, Agreeableness, and Neuroticism) and interest secondary constructs (differentiation, consistency, congruence, and coherence).

Population

The target population was college students seeking career assistance. The available population was undergraduate students who enrolled in an introductory career development course. A common reason for enrolling in this type of course is to receive assistance in making a career decision or to solve a problem related to career issues. Students in this population are typically at various levels of career decidedness, interest type, interest structure, and personality structure.

Sample

The sample consisted of 209 undergraduate students. These students were enrolled in approximately 10 sections of an introductory career development course during the Fall of 2003 and Spring of 2004 at a southeastern research university. Demographics of the sample include: 50.2% females, 49.8% males, freshmen 9.6%, sophomores 45.9%, juniors 21.5%, and seniors 22.5%. Ages range from 18-39 and ethnic diversity of the sample is reasonably proportional to the general student population at the university.

Table 4

Sample Sex, Ethnicity, Age, and Academic Class Demographics

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</table>

*Note: * This information retrieved from *FSU Fact Book 2003-2004.*
http://www.ir.fsu.edu/reports_pubs/reportsinfo.asp?ID=t_factbook2003-04

**Research Design**

First the relationships among interest profile elevation, personality, and interest secondary constructs were explored. This was carried out through both simple and multiple regressions. Following those analyses, the sample was broken into quartiles based on interest profile elevation scores. To determine if there is a difference among the quartiles of personality constructs in relation to interest profile elevation, a MANOVA was conducted. The linear and quadratic nature of the personality variables’ means in relation to interest profile elevation was
explored through orthogonal contrasts. The relationship between interest secondary constructs and personality was analyzed through a canonical correlation.

**Variables**

The variables of interest in this study were interest profile elevation, personality, and interest secondary constructs. Interest profile elevation was derived by adding each participant’s summary scores from the SDS (Holland, Fritzsche, & Powell, 1994). Personality was operationalized using the NEO-FFI (Costa & McCrae, 1992). Interest secondary constructs scores were taken from the participants’ SDS results. The SDS Professional Summary (Reardon & PAR Staff, 2001) provided the information needed to determine interest secondary construct scores.

**Instrumentation**

*The Self-Directed Search*

The Self-Directed Search (SDS; Holland, Fritzsche, & Powell, 1994) is an interest inventory that utilizes Holland’s RIASEC theory as a way of classifying an individual’s interests. On the SDS, individuals rate their activities, competencies, preferences, occupations, and self-estimates in terms of the six RIASEC areas. Individuals are also given the opportunity to list their occupational aspirations, which are referred to as occupational daydreams. The summary scales for the SDS have reliability estimates of $r = 0.90$ to $0.94$, indicating substantial reliability (Holland, Fritzsche, & Powell, 1994). Test-retest reliability was cited as ranging from 0.76 to 0.89. Because eliciting vocational aspirations is merely making a list of occupational daydreams, specific psychometric data for this construct are not included in the *SDS Technical Manual* (Holland, Fritzsche, & Powell, 1994). Aspirations were based on the three-letter code of the first five aspirations.

The SDS’s predictive validity has been demonstrated with respect to occupational choice and college major in high school, college, and adult samples. Holland, Fritzsche, and Powell (1994) reported that evidence of SDS’s construct validity has been reported in over 500 investigations.

*The NEO-FFI Form S*

The NEO-FFI Form S is a shortened version of the NEO Personality Inventory (NEO-PI; Costa & McCrae, 1992) that provides information on college student personality based on the Five-Factor Model of personality. The Five-Factor Model is composed of five broad dimensions:
Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. The NEO-FFI Form S is a 63-item self-report instrument that takes 10-15 minutes to administer. The internal consistency for the NEO-FFI form S ranges from $r = 0.68$ to 0.86.

Because the NEO-FFI is essentially a short form of the NEO-PI, it is appropriate to consider the psychometric qualities of the NEO-PI. The NEO-PI measures normal personality traits in adults based on the Five Factor Model of personality. The NEO-PI is a “concise measure of the five major dimensions, or domains, of personality and some of the more important traits or facets that define each domain” and it “embodies a conceptual model that distills decades of factor analytic research on the structure of personality” (Costa & McCrae, 1992, p. 1). The five measured domains are labeled Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C). These domains and the facet scales that comprise them are defined in the following section. The internal consistency estimates for the NEO-PI-R ranges from .56-.81 in self-reports and .60-.90 in observer ratings. Test-retest reliability for the facet scales range from .66-.92. Test-retest reliability for the N, E, and O scales are .87, .91, and .86, respectively.

Construct validity has been demonstrated between many of the NEO-PI-R scales and a variety of external criteria such as “psychological well-being, coping and defenses, needs and motivation, Jungian types, interpersonal traits, and creativity and divergent thinking” (Costa & McCrae, 1992, p. 49).

The NEO-FFI was the measure used to collect data in this study. It is a “brief, comprehensive measure of the five domains of personality” (Costa & McCrae, 1992, p. 11). It takes about 10 minutes to administer and does not provide information on the specific facet scores, only on the five basic domain areas. Evidence of convergent validity is demonstrated through the high level of correlation between the NEO-FFI and the domain scales of the NEO-PI. Correlations were .92, .90, .91, .77, and .87 for N, E, O, A, and C domains, respectively. Costa and McCrae (1992) acknowledge that the NEO-FFI is not equivalent to the full version, the NEO-PI. They state, “some precision is traded for speed and convenience” (p. 54).

**Procedures**

Data were collected for this study during the Fall of 2003 and Spring of 2004. Students in 10 sections of the SDS 3340: Introduction to Career Development course at Florida State University were recruited to participate in this study. As students walked into the classroom on
the first day of class, they were asked to complete the demographic form (which is administered as part of the course; See Appendix A). Students were then given a folder of assessments to complete which included the NEO-FFI. The folders had an informed consent form as the first document in the folder (See Appendix B; the FSU Human Subjects Committee approval letter is also included in this appendix). The folder contents were reviewed with the participants before they began to complete the assessments. The order in which the NEO-FFI was administered to the participants was alternated to control for possible order effects.

Two weeks later each participant completed the paper-and-pencil version of the Self-Directed Search. Data from the paper-and-pencil version of the SDS were entered into the SDS Software Portfolio computer system (Reardon & PAR Staff, 2001). A Professional Summary (See Appendix C) along with a client interpretive report was produced. The Professional Summary provided information related to the clients’ code, consistency, differentiation, coherence, and congruence. Research assistants unaware of the purposes of the study used the information on the Professional Summaries to calculate the profile elevation and record the interest secondary construct scores of each participant.

In order to maintain confidentiality, the name field on the instruments was blocked out and student participants were identified by a unique participant number that was written on the NEO-FFI prior to its administration. This unique number was written on the SDS Professional Summary by research assistants during the interest secondary constructs recording process. File folders were kept out of public view and under the control of the primary investigator. Participants’ responses were identified using participant identification numbers in a data file for statistical analysis. Only group data was reported to maintain the confidentiality of the individual participants.

Analysis of the Data

Three types of statistical analyses; regression, MANOVA, and canonical correlation; were undertaken to explore the relationships between interest profile elevation, personality, and interest secondary constructs. All analysis were carried out using Statistical Package for the Social Sciences (SPSS). The analysis procedures to investigate each of the six hypotheses and three research questions are as follows.
Domain 1: Interest Profile Elevation and Personality

Research Question: What is the relationship between interest profile elevation and personality?

Hypotheses

a) There is a positive relationship between interest profile elevation and Openness.
b) There is a negative relationship between interest profile elevation and Neuroticism.
c) There is no relationship between interest profile elevation and Conscientiousness, Extroversion, or Agreeableness.

Domain 1 examined the relationship between interest profile elevation and personality. Interest profile elevation is as the sum of the six section scores on the SDS (Fuller, Holland, & Johnston, 1999). Personality is defined by the Five-Factor Model of personality operationalized by the NEO-FFI (Costa & McCrae, 1992). The hypotheses within domain 1 (i.e., interest profile elevation and personality) were varied in their direction. These assumptions were based on previous findings (Fuller, Holland, & Johnston, 1999; Gottfredson & Jones, 1993).

The first three hypotheses sought to ascertain the overall relationship between interest profile elevation and the five factors of personality. Additionally, these hypotheses sought to investigate the relationship between personality and interest profile elevation when the sample’s score on this variable is broken into quartiles. A linear regression analysis was conducted to explore the relationship interest profile elevation, as a linear variable, had with each of the five personality factors. This analysis produced a Pearson product moment coefficient. Assumptions regarding family-wise error rate were taken into consideration and Bonferroni’s correction formula (.05/number of tests) was employed to control for such error. A coefficients table outlined any personality factors that significantly contribute to interest profile elevation. These significant factors were used to develop a model of best predictors. These best predictors were used to identify a subsequent multivariate linear regression model. The results of this analysis showed the level of the relationship between interest profile elevation and the best set of personality factor predictors.

Following these overall linear analyses of interest profile elevation’s relation to personality, interest profile elevation was separated in quartiles of upper, upper middle, lower middle, and lower. It was hypothesized that there will be no relationship between the quartiles of interest profile elevation and the five aspects of personality. A MANOVA was used to explore
the relationship that interest profile elevation in quartiles has with the five factors of personality. Post hoc ANOVAs were conducted to determine the exact nature of the statistically significant relationships. A set of orthogonal contrasts allowed the researcher to explore more than the possibility of a linear relationship among the variables but also the possibility of a quadratic relationship. This is similar to the method used in the article by Fuller, Holland, and Johnston (1999) that also explored interest profile elevation’s relationship to personality.

Domain 2: Interest Profile Elevation and Interest Secondary Constructs

Research Question: What is the relationship between interest profile elevation and interest secondary constructs?

Hypotheses

d) There will be a positive relationship between interest profile elevation and consistency.

e) There will be no relationship between interest profile elevation and differentiation, congruence, or coherence.

Domain 2 examined the relationship between interest profile elevation and interest secondary constructs. Interest secondary constructs were defined as the secondary constructs (differentiation, consistency, congruence, and coherence) that are included in Holland’s theory and within the interpretative aspects of the SDS (Reardon & Lenz, 1998). The hypotheses within this domain were varied in their direction. These assumptions were based on previous findings (Swanson & Hansen, 1986).

These hypotheses sought to explore the overall relationship between interest profile elevation and the interest secondary constructs. A linear regression analysis was conducted to investigate the relationship that interest profile elevation, as a linear variable, had with the five aspects of interest secondary constructs (i.e., consistency, congruence, coherence, and two measures of differentiation). This analysis produced a Pearson product moment coefficient. Assumptions regarding family-wise error rate were taken into consideration and Bonferroni’s correction was employed to control for such error. A coefficients table outlined any interest secondary constructs that significantly contribute to interest profile elevation. Special attention was given to the existence of multicollinearity among the interest secondary constructs. These factors were taken into account to develop a model of best predictors. These best predictors were used to conduct a subsequent multivariate linear regression. The results of this analysis showed
the extent of the relationship between interest profile elevation and this best set of interest secondary construct predictors.

Domain 3: Interest Secondary Constructs and Personality

Research Question: What is the relationship between interest secondary constructs and personality?

Hypotheses

f) There will be no relationship between interest secondary constructs (consistency, congruence, coherence, and two measures of differentiation) and personality (Openness, Conscientiousness, Extroversion, Agreeableness, and Neuroticism).

Domain 3 looked at the relationship between interest secondary constructs and personality. These variables were defined in the same manner as they were in Domain 1 and 2, respectively. Several studies have explored the relationship between the five factors of personality (e.g., Agreeableness, Conscientiousness, Neuroticism) and the six aspects of vocational interest (e.g., Realistic, Artistic, Enterprising; Larson, Rottinghaus, & Borgen, 2002). Yet, the researcher found few studies examining the relationship between personality and interest secondary constructs as defined in this way. Therefore, all hypotheses in Domain 3 were in the null form.

This hypothesis pertained to the amount of unique variance that the five personality variables accounted for in the five interest secondary construct scores. An omnibus canonical correlation was utilized to assess the shared variation between the two sets of variables. Each of the individual canonical loadings of the five personality variables and five interest secondary constructs were observed to see if there are one or more significant canonical roots.

Summary

The intent of the three research questions and analyses was to explore the overall relationship among interest profile elevation, personality, and interest secondary constructs. These questions were posed in hopes of clarifying the contribution of interest profile elevation and of narrowing the gaps in the vocational psychology literature surrounding interest profile elevation, personality, and interest secondary constructs.
CHAPTER IV

RESULTS

To explore the relationships among interest profile elevation, personality, and interest secondary constructs both correlational and regression analyses were performed. The main variables of interest were interest profile elevation and interest secondary constructs as measured by the Self-Directed Search (Holland, Fritzscbe, & Powell, 1994) and personality as measured by the NEO-FFI (Costa & McCrae, 1992). Components of both instruments were compared to each other and were used in determining the amount of significant variance that profile elevation contributes to personality and interest secondary constructs, as well as, the amount of shared variance among interest secondary constructs and personality. This chapter presents the results of these analyses including a demographic description of the sample, the means and standard deviations for each of the assessments, and the hypotheses and results for each of the research questions originally proposed.

Demographic Description of the Sample

The sample consisted of 209 undergraduate students enrolled in approximately 10 sections of an introductory career development course during the Fall of 2003 and Spring of 2004 at a southeastern research university. Demographics for the data sample and university population are presented in Table 4. Participants consisted of 105 (50.2%) female and 104 (49.8%) male students. The self-identified ethnic composition of the group was 36 (17.2%) African-American, 4 (1.9%) Asian-American, 126 (60.3%) Caucasian, 29 (13.9%) Hispanic-American, 11 (5.3%) Other, and 3 (1.4%) preferred not to respond. The sample ranged in age from 18 to 39 with a mean age of 20.23. Regarding academic class, 20 (9.6%) were freshmen, 96 (45.9%) were sophomores, 45 (21.5%) were juniors, and 47 (22.5%) were seniors.

The percentage of gender, ethnicity, and classification within the university population from which this sample was taken is also represented in Table 4. The distribution of gender in
the university population is fairly similar to that of the sample. Discrepancies between the university population and sample in the areas of ethnicity and classification may be due to the type of sample taken. As stated, most students entering the sampled course were seeking career-related assistance. Perhaps the sample is representative of those that are typically university staff-referred or self-referred for career assistance. For example, sophomores represent 16.2% of the university population and 45.9% of the sample. Students often attempt to choose a college major by their sophomore year. Perhaps this is a reason for overrepresentation of sophomores in a course designed for students seeking career assistance.

Data Analyses

There were 209 participants in this study and for Domain 1 all of these participants were used in the analyses. For Domains 2 and 3, 191 participants were used due to missing data. This data was missing due to a lack of score on the interest secondary constructs of congruence and coherence. It is likely that some participants did not yield a score on these two constructs because they did not provide at least three occupational daydreams when they completed the Self-Directed Search. The means and standard deviations were derived for the two instruments used in this study, and these data are included in Table 5. Means for the Self-Directed Search were calculated for interest profile elevation and interest secondary constructs. Means for the NEO-FFI were calculated for the five factor scores.

Table 5
Means and Standard Deviations

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest Profile Elevation</td>
<td>133.9</td>
<td>33.7</td>
<td>62-240</td>
</tr>
<tr>
<td>Interest Secondary Constructs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differentiation (High – Low)</td>
<td>26.6</td>
<td>7.8</td>
<td>8-46</td>
</tr>
<tr>
<td>Differentiation (Iachan)</td>
<td>5.9</td>
<td>2.4</td>
<td>.75-11.75</td>
</tr>
<tr>
<td>Consistency</td>
<td>2.6</td>
<td>0.63</td>
<td>1-3</td>
</tr>
<tr>
<td>Coherence</td>
<td>1.8</td>
<td>0.72</td>
<td>1-3</td>
</tr>
</tbody>
</table>
Table 5 Continued

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest Secondary Constructs (continued)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congruence</td>
<td>2.1</td>
<td>0.49</td>
<td>1-3</td>
</tr>
<tr>
<td>Personality Factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuroticism</td>
<td>19.46</td>
<td>8.0</td>
<td>1-46</td>
</tr>
<tr>
<td>Extroversion</td>
<td>31.59</td>
<td>6.0</td>
<td>7-48</td>
</tr>
<tr>
<td>Openness</td>
<td>26.1</td>
<td>6.2</td>
<td>10-43</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>31.4</td>
<td>6.3</td>
<td>15-45</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>30.9</td>
<td>5.3</td>
<td>18-43</td>
</tr>
</tbody>
</table>

Domain 1 Results: Interest Profile Elevation and Personality

Research Question: What is the relationship between interest profile elevation and personality?

Hypotheses

a) There is a positive relationship between interest profile elevation and Openness.
b) There is a negative relationship between interest profile elevation and Neuroticism.
c) There is no relationship between interest profile elevation and Conscientiousness, Extroversion, or Agreeableness.

The results of the correlations matrix (Table 6) show that Openness $r = .38$ ($p < .001$, $N = 209$), Conscientiousness $r = .11$ ($p < .05$, $N = 209$), and Extroversion $r = .13$ ($p < .05$, $N = 209$) are significantly, positively correlated with interest profile elevation. The relationship between interest profile elevation and personality was further explored through a linear regression and a MANOVA using quartiled interest profile elevation scores.
Table 6

Correlations between SDS Interest Profile Elevation and NEO-FFI Personality Factors

<table>
<thead>
<tr>
<th>Interest Profile Elevation</th>
<th>N</th>
<th>E</th>
<th>O</th>
<th>A</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.000</td>
<td>-0.040</td>
<td>0.127*</td>
<td>0.387***</td>
<td>-0.043</td>
<td>0.114*</td>
</tr>
<tr>
<td>N</td>
<td>1.000</td>
<td>-0.274***</td>
<td>-0.019</td>
<td>-0.208**</td>
<td>-0.308***</td>
</tr>
<tr>
<td>E</td>
<td>1.000</td>
<td>0.085</td>
<td>0.203**</td>
<td>0.121*</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>1.000</td>
<td>-0.084</td>
<td>-0.110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>1.000</td>
<td>0.281***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05    **p < .01    ***p < .001

The results of the linear regression are shown in Table 7. This table shows that the $R^2$ of .186 was statistically significant at the 0.001 level ($F = 9.3, F [.05; 5, 203] = 30.81, p = .001$). The adjusted $R^2$ that compensates for the positive bias in $R^2$ was .166, indicating about 16.6% of the variability of interest profile elevation was explained by the five factors of personality. Only Openness and Conscientiousness captured significant unique variation to the model and had standardized regression coefficients of .392 and .176, respectively.

These results supported the hypothesis that Openness would have a positive relationship with interest profile elevation. The hypotheses that Neuroticism would have a negative relationship and that Conscientiousness would have no relationship were both rejected based on these results. The hypothesis that Agreeableness would have no relationship with interest profile elevation was supported. Extroversion was correlated with interest profile elevation (See Table 6) but not found to be a factor in predicting it as demonstrated in the results of the linear regression (See Table 7). There was some relationship between Extroversion and interest profile elevation; therefore, the hypothesis that there is no relationship was rejected.
Table 7

Linear Regression of SDS Interest Profile Elevation and NEO-FFI Personality Factors

<table>
<thead>
<tr>
<th></th>
<th>R²</th>
<th>Adj R²</th>
<th>F</th>
<th>B</th>
<th>β</th>
<th>p &lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>.140</td>
<td>.033</td>
<td>.633</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>.537</td>
<td>.096</td>
<td>.153</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>2.142</td>
<td>.392**</td>
<td>.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-.463</td>
<td>-.073</td>
<td>.285</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>.944</td>
<td>.176*</td>
<td>.011</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[
\beta_{O} = .404, \quad \beta_{C} = .158
\]

The two statistically significant variables, Openness and Conscientiousness, were then entered in a step-wise regression model shown in Table 8. This two-step model yielded an R² of .174 that was statistically significant at the 0.001 level (\( F = 21.73, F \{.05; 2, 206\} = 30.80, p = .001 \)). The adjusted R² was .166, indicated about 16.6% of the variability of interest profile elevation was explained by the personality factors Openness and Conscientiousness. In the second step of the model Openness had a standardized regression coefficient of .404 and Conscientiousness had a standardized regression coefficient of .158.

Table 8

Step-Wise Regression of SDS Interest Profile Elevation and NEO-FFI Personality Factors

<table>
<thead>
<tr>
<th></th>
<th>R²</th>
<th>Adj R²</th>
<th>F</th>
<th>B</th>
<th>β</th>
<th>p &lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.387</td>
<td>.149</td>
<td>36.368*</td>
<td>.387</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>2.111</td>
<td>.387</td>
<td>.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.417</td>
<td>.174</td>
<td>21.725*</td>
<td>.404</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>2.206</td>
<td>.404</td>
<td>.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>.849</td>
<td>.158</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .001
As seen in Fuller, Holland, and Johnston (1999), the five personality scores were separated into quartiles with respect to interest profile elevation in order to further understand the relationship between these variables. The Means and Standard Deviations of this quartiled data are found in Table 9. A MANOVA was used to analyze those data (See Table 10). The multivariate null hypothesis of equality of the means over all groups for all variables was rejected at the 0.001 level (Wilk’s lambda = .775, \( F[15, 599] = 3.59, p < 0.001 \)); Pillai’s statistic [0.24] and Hotelling’s test statistic [0.28] also resulted in \( p \) values that were less than 0.001. The Wilk’s multivariate effect size was moderate at 0.22 (effect size = 1-.775). This indicates the model explained 22% of the variability in the matrix.

**Table 9**

Means and Standard Deviations of NEO-FFI Personality Factors when SDS Interest Profile Elevation is used to Quartile the Scores

<table>
<thead>
<tr>
<th>Personality Factors</th>
<th>Profile Elevation Quartiles</th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Low</td>
<td>19.24</td>
<td>7.066</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Medium-Low</td>
<td>19.36</td>
<td>8.540</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Medium-High</td>
<td>20.33</td>
<td>8.984</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>18.96</td>
<td>7.573</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>19.46</td>
<td>8.011</td>
<td>209</td>
</tr>
<tr>
<td>E</td>
<td>Low</td>
<td>30.50</td>
<td>4.978</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Medium-Low</td>
<td>31.60</td>
<td>5.725</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Medium-High</td>
<td>32.20</td>
<td>6.756</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>32.09</td>
<td>6.548</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>31.59</td>
<td>6.033</td>
<td>209</td>
</tr>
<tr>
<td>O</td>
<td>Low</td>
<td>23.87</td>
<td>5.198</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Medium-Low</td>
<td>24.58</td>
<td>5.384</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Medium-High</td>
<td>25.55</td>
<td>6.188</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>30.13</td>
<td>5.978</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26.07</td>
<td>6.177</td>
<td>209</td>
</tr>
</tbody>
</table>
Table 9 Continued

<table>
<thead>
<tr>
<th>Personality Factors</th>
<th>Profile Elevation Quartiles</th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Low</td>
<td>30.06</td>
<td>5.530</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Medium-Low</td>
<td>31.84</td>
<td>5.437</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Medium-High</td>
<td>31.31</td>
<td>4.650</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>30.41</td>
<td>5.403</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30.88</td>
<td>5.282</td>
<td>209</td>
</tr>
<tr>
<td>C</td>
<td>Low</td>
<td>29.67</td>
<td>6.250</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Medium-Low</td>
<td>31.64</td>
<td>6.445</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Medium-High</td>
<td>32.90</td>
<td>5.773</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>31.48</td>
<td>6.389</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>31.40</td>
<td>6.285</td>
<td>209</td>
</tr>
</tbody>
</table>

Table 10

MANOVA on Quartiled SDS Interest Profile Elevation and NEO-FFI Personality Factors

<table>
<thead>
<tr>
<th>Personality Factors</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>.284</td>
<td>.838</td>
</tr>
<tr>
<td>E</td>
<td>.883</td>
<td>.452</td>
</tr>
<tr>
<td>O</td>
<td>13.091*</td>
<td>.001</td>
</tr>
<tr>
<td>A</td>
<td>1.253</td>
<td>.293</td>
</tr>
<tr>
<td>C</td>
<td>2.416</td>
<td>.069</td>
</tr>
</tbody>
</table>

* p < .01

To identify the dependent variables that contributed to the rejection of the multivariate null hypothesis, univariate ANOVAs were conducted for each of the dependent variables (See Table 11). Only the ANOVA null hypothesis for Openness was rejected at the 0.05 alpha level with a p value less than 0.001 ($F [3, 205] = 13.09, p < 0.001$).

The significant ANOVA supports follow-up testing of all pair-wise comparisons for the Openness dependant variable. The Bonferroni procedure was used for each dependent variable to provide additional family-wise protection. These data are presented in Table 11. Of all comparisons, the highest quartile of Openness was statistically significantly different from the
other three quartiles in relation to interest profile elevation. The highest group had a higher mean than the other three groups. When one derives the difference between the Means of the High (30.13) and Low (23.87) Openness groups with respect to interest profile elevation and divides that by the average of their Standard Deviations (5.5), a large effect size of 1.0 is derived. Using this same method a moderately high effect size (.60) results between the High and Medium-High group.

Table 11
Tukey’s Pair-Wise Comparisons of Quartiles for the Variable Openness

<table>
<thead>
<tr>
<th>Mean Difference</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Openness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>Med.-Low</td>
<td>-.71</td>
<td>1.119</td>
</tr>
<tr>
<td></td>
<td>Med.-High</td>
<td>-1.68</td>
<td>1.113</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>-6.26*</td>
<td>1.097</td>
</tr>
<tr>
<td>Med.-Low</td>
<td>Low</td>
<td>.71</td>
<td>1.119</td>
</tr>
<tr>
<td></td>
<td>Med.-High</td>
<td>-.97</td>
<td>1.134</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>-5.55*</td>
<td>1.119</td>
</tr>
<tr>
<td>Med.-High</td>
<td>Low</td>
<td>1.68</td>
<td>1.113</td>
</tr>
<tr>
<td></td>
<td>Med.-Low</td>
<td>.97</td>
<td>1.134</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>-4.58*</td>
<td>1.113</td>
</tr>
<tr>
<td>High</td>
<td>Low</td>
<td>6.26*</td>
<td>1.097</td>
</tr>
<tr>
<td></td>
<td>Med.-Low</td>
<td>5.55*</td>
<td>1.119</td>
</tr>
<tr>
<td></td>
<td>Med.-High</td>
<td>4.58*</td>
<td>1.113</td>
</tr>
</tbody>
</table>

* p < .001

Note: Bonferroni correction applied to protect against family-wise error

The MANOVA was followed by conducting orthogonal contrasts, which are shown in Table 12. This was used to detect any linear or quadratic nature of personality when compared to interest profile elevation. This analysis showed Openness may have both a linear ($F[1, 205] = 32.35; p < 0.001$) and quadratic ($F[1,205] = 6.05; p < 0.05$) nature that is statistically significant.
at the 0.05 level. In other words, when Openness was separated into quartiles with respect to interest profile elevation the data showed that it had both a linear and quadratic nature. The quadratic nature was significant because the first and fourth quartiles were more similar than different. The fact that Openness had a significant linear and quadratic nature was unique. This indicated that the relationship of the quartiles fit both a linear and quadratic shape (Hinkle, Wiersma, & Jurs, 1998).

Conscientiousness was shown to have a statistically significant quadratic nature at the .05 level (\(F[1, 205] = 3.88; p < 0.05\)). To further explain, when Conscientiousness was separated into quartiles with respect to interest profile elevation the data showed it had only a significant quadratic nature. This means that the first and fourth quartiles of Conscientiousness were more similar than different, and the shape of the data did not express a linear relationship. With a linear relationship, each quartile’s value would be greater or less than the previous (Hinkle, Wiersma, & Jurs, 1998).

The pair-wise comparisons for the Conscientiousness variable are found in Table 13. The medium-high Conscientiousness group was statistically significantly different from the low Conscientiousness group with respect to interest profile elevation at the 0.05 level. The Means of Openness and Conscientiousness separated into quartiles with respect to profile elevation are represented in Figures 2 and 3, respectively.

Table 12
Orthogonal Contrasts with NEO-FFI Personality Variables Quartiled by SDS Interest Profile Elevation Score

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Openness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Omnibus Model</td>
<td>13.091</td>
<td><strong>.0001</strong></td>
</tr>
<tr>
<td>Linear</td>
<td>32.179</td>
<td><strong>.0001</strong></td>
</tr>
<tr>
<td>Quadratic</td>
<td>6.017*</td>
<td>.05</td>
</tr>
<tr>
<td><strong>Conscientiousness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quadratic</td>
<td>3.882*</td>
<td>.05</td>
</tr>
</tbody>
</table>

* \(p < .05\)  ** \(p < .001\)

Note. Omitted scales were not significant
### Table 13

Tukey’s Pair-Wise Comparisons of Quartiles for the Variable Conscientiousness

<table>
<thead>
<tr>
<th>Conscientiousness</th>
<th>Mean Difference</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Med.-Low</td>
<td>-1.97</td>
<td>1.221</td>
<td>.646</td>
<td>-5.23</td>
<td>1.28</td>
</tr>
<tr>
<td></td>
<td>Med.-High</td>
<td>-3.24*</td>
<td>1.215</td>
<td>.050</td>
<td>-6.47</td>
<td>.00</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>-1.81</td>
<td>1.197</td>
<td>.787</td>
<td>-5.00</td>
<td>1.38</td>
</tr>
<tr>
<td>Med.-Low</td>
<td>Low</td>
<td>1.97</td>
<td>1.221</td>
<td>.646</td>
<td>-1.28</td>
<td>5.23</td>
</tr>
<tr>
<td></td>
<td>Med.-High</td>
<td>-1.26</td>
<td>1.238</td>
<td>1.000</td>
<td>-4.56</td>
<td>2.04</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>.16</td>
<td>1.221</td>
<td>1.000</td>
<td>-3.09</td>
<td>3.41</td>
</tr>
<tr>
<td>Med.-High</td>
<td>Low</td>
<td>3.24*</td>
<td>1.215</td>
<td>.050</td>
<td>.00</td>
<td>6.47</td>
</tr>
<tr>
<td></td>
<td>Med.-Low</td>
<td>1.26</td>
<td>1.238</td>
<td>1.000</td>
<td>-2.04</td>
<td>4.56</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>1.42</td>
<td>1.215</td>
<td>1.000</td>
<td>-1.82</td>
<td>4.66</td>
</tr>
<tr>
<td>High</td>
<td>Low</td>
<td>1.81</td>
<td>1.197</td>
<td>.787</td>
<td>-1.38</td>
<td>5.00</td>
</tr>
<tr>
<td></td>
<td>Med.-Low</td>
<td>-.16</td>
<td>1.221</td>
<td>1.000</td>
<td>-3.41</td>
<td>3.09</td>
</tr>
<tr>
<td></td>
<td>Med.-High</td>
<td>-1.42</td>
<td>1.215</td>
<td>1.000</td>
<td>-4.66</td>
<td>1.82</td>
</tr>
</tbody>
</table>

* *p < .05

Note: Bonferroni correction applied to protect against family-wise error
Openness Means

Figure 2

Comparison of the Means of Openness when in Quartiles with Respect to Interest Profile Elevation

Conscientiousness Means

Figure 3

Comparison of the Means of Conscientiousness when in Quartiles with Respect to Interest Profile Elevation
Domain 2 Results: Interest Profile Elevation and Interest Secondary Constructs

Research Question: What is the relationship between interest profile elevation and interest secondary constructs?

Hypotheses

d) There will be a positive relationship between interest profile elevation and consistency.

e) There will be no relationship between interest profile elevation and differentiation, congruence, or coherence.

The results of the correlation matrix, presented in Table 14, show several statistically significant correlations between interest profile elevation and the interest secondary constructs. Those constructs significantly related to interest profile elevation include differentiation high-low, .177; differentiation Iachan, -.204; and consistency, .177. The relationship among these variables was further explored through a linear regression.

Table 14

Correlations between SDS Interest Profile Elevation and Interest Secondary Constructs

<table>
<thead>
<tr>
<th></th>
<th>Interest Profile Elevation</th>
<th>Differentiation High-Low</th>
<th>Differentiation Iachan</th>
<th>Congruence</th>
<th>Coherence</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest Profile Elevation</td>
<td>1.000</td>
<td>.177**</td>
<td>-.204**</td>
<td>-.065</td>
<td>-.112</td>
<td>.177**</td>
</tr>
<tr>
<td>Differentiation High-Low</td>
<td>1.000</td>
<td>1.000</td>
<td>.651***</td>
<td>-.068</td>
<td>.038</td>
<td>.284***</td>
</tr>
<tr>
<td>Differentiation Iachan</td>
<td>1.000</td>
<td>.031</td>
<td>.220**</td>
<td>.208**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Congruence</td>
<td>1.000</td>
<td>.247***</td>
<td>.138*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coherence</td>
<td>1.000</td>
<td>.041</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistency</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .05  **p < .01  ***p < .001
The results of the linear regression, presented in Table 15, show that the $R^2$ of .231 was statistically significant at the 0.001 level ($F = 11.10 \ [.05; 5,185] = 30.70; \ p < .001$). The adjusted $R^2$ that compensates for the positive bias in $R^2$ was .210. This indicates 21% of the variability of interest profile elevation was explained by the interest secondary constructs. Only differentiation high-low, differentiation Iachan, and consistency provided for significant unique contribution to the model with standardized regression coefficients of .49, -.55, and .16, respectively. This result shows that differentiation high-low and consistency have a direct relationship with interest profile elevation and differentiation Iachan has an inverse relationship with interest profile elevation.

<table>
<thead>
<tr>
<th></th>
<th>$R^2$</th>
<th>Adj $R^2$</th>
<th>$F$</th>
<th>$B$</th>
<th>$\beta$</th>
<th>$p &lt;$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differentiation High-Low</td>
<td>2.172</td>
<td>.491**</td>
<td></td>
<td>.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differentiation Iachan</td>
<td>-7.964</td>
<td>-.554**</td>
<td></td>
<td></td>
<td></td>
<td>.001</td>
</tr>
<tr>
<td>Congruence</td>
<td>-2.448</td>
<td>-.035</td>
<td></td>
<td>.610</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coherence</td>
<td>-.353</td>
<td>-.007</td>
<td></td>
<td>.915</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistency</td>
<td>8.666</td>
<td>.158*</td>
<td></td>
<td></td>
<td></td>
<td>.023</td>
</tr>
</tbody>
</table>

These results support the hypothesis that consistency will have a positive relationship with interest profile elevation. These results call for a rejection of the hypothesis that the two measures of differentiation would have no relationship with interest profile elevation and support the hypothesis that congruence and coherence would have no relationship.

The significant variables were then entered into a step-wise regression model. These data are presented in Table 16. The three step model yielded an $R^2$ of .479 that was statistically significant at the .001 level ($F = 18.56 \ [.05; 1, 187] = 30.57; \ p < .001$). The adjusted $R^2$ was .229;
indicating 22.9% of the variability of interest profile elevation was explained by the interest secondary constructs differentiation high-low, differentiation Iachan, and consistency. In the third step of the model, the standardized regression coefficients were as follows: differentiation high-low, .50; differentiation Iachan, -.56; and consistency, .15.

Table 16
Step-Wise Regression of SDS Interest Profile Elevation and Interest Secondary Constructs

<table>
<thead>
<tr>
<th></th>
<th>R²</th>
<th>Adj R²</th>
<th>F</th>
<th>B</th>
<th>β</th>
<th>p &lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.042</td>
<td>.037</td>
<td>8.198**</td>
<td>-2.934</td>
<td>-.204</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>Differentiation Iachan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.208</td>
<td>.200</td>
<td>24.721***</td>
<td>-7.975</td>
<td>-.554</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Differentiation Iachan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Differentiation High-Low</td>
<td></td>
<td></td>
<td>2.381</td>
<td>.538</td>
<td>.001</td>
</tr>
<tr>
<td>3</td>
<td>.479</td>
<td>.229</td>
<td>18.557*</td>
<td>-8.062</td>
<td>-.560</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Differentiation Iachan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Differentiation High-Low</td>
<td></td>
<td></td>
<td>2.208</td>
<td>.499</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Consistency</td>
<td></td>
<td></td>
<td>8.339</td>
<td>.152</td>
<td>.05</td>
</tr>
</tbody>
</table>

* p < .05  ** p < .01  *** p < .001

Domain 3 Results: Interest Secondary Constructs and Personality

Research Question: What is the relationship between interest secondary constructs and personality?

Hypothesis

f) There will be no relationship between interest secondary constructs (consistency, congruence, coherence, and two measures of differentiation) and personality (Openness, Conscientiousness, Extroversion, Agreeableness, and Neuroticism).
The first canonical function was statistically significant ($\chi^2 = 40.97, df = 25; p < .05$). The magnitude of the canonical correlation’s first root was .326, indicating the amount of convergence between the personality and interest secondary construct data sets [convergence = $(.326)^2 = .106$]. A Wilk’s of .801 demonstrates there is about 20% of shared variance between the linear composites of variables. The next four canonical roots were not significant at the $p < .05$ level. Those factors in set 1 with practically significant canonical loadings are Extroversion, -.347; Agreeableness, -.583; and Conscientiousness, -.726. The only practically significant loading in set 2 is differentiation high-low, -.630 (See Table 17). In other words, differentiation high-low, Conscientiousness, Agreeableness, and Extroversion account for 20% of the variance of the first root. Therefore, the hypothesis is rejected regarding no relationship between the interest secondary constructs and personality.

The combination of variables (i.e., differentiation high-low, Conscientiousness, Agreeableness, and Extroversion) leads to a label of maturity for this significant canonical root. A differentiated Self-Directed Search profile is an indication of maturity in one’s career interests. In addition, one that is agreeable, extroverted, and conscious tends to be well equipped to face the challenges of the world. These people likely complete their tasks in a friendly, high-quality, mature manner.

<table>
<thead>
<tr>
<th>Set 1</th>
<th>Canonical Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuroticism</td>
<td>-.157</td>
</tr>
<tr>
<td>Extroversion</td>
<td>-.347</td>
</tr>
<tr>
<td>Openness</td>
<td>-.003</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-.583</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-.726</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set 2</th>
<th>Canonical Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differentiation High-Low</td>
<td>-.630</td>
</tr>
<tr>
<td>Differentiation Iachan</td>
<td>.168</td>
</tr>
<tr>
<td>Congruence</td>
<td>.145</td>
</tr>
<tr>
<td>Coherence</td>
<td>.270</td>
</tr>
<tr>
<td>Consistency</td>
<td>-.255</td>
</tr>
</tbody>
</table>

Table 17
Canonical Correlation of NEO-FFI Personality Variables and SDS Interest Secondary Constructs
CHAPTER V
DISCUSSION

This study’s purpose was to increase knowledge about the relationships among interest profile elevation, personality, and the interest secondary constructs. Two assessment instruments were used to measure the variables of this study. The Self-Directed Search (Holland, Fritzsche, & Powell, 1994) was used to measure interest profile elevation and the interest secondary constructs. Interest profile elevation was defined as the sums of the six section scores on the SDS (Fuller, Holland, & Johnston, 1999). The interest secondary constructs used as variables in this study included two measures of differentiation (high-low and Iachan), consistency, congruence, and coherence. The NEO-FFI Form S (Costa & McCrae, 1992) was used to measure the five factors of personality included in this study. These factors include Neuroticism, Extroversion, Openness, Agreeableness, and Conscientiousness. This chapter includes a summary of the findings as they relate to the hypotheses and the three domains of inquiry used to outline this study. It also includes a discussion of the results, study limitations, implications for practice, and recommendations for future research.

Summary of the Findings Related to the Hypotheses and Organized by Domains

This section includes a summary of the findings in Domains 1, 2, and 3. A shortened, less technical explanation of the results is presented for each domain.

Hypotheses for Domain 1: Interest Profile Elevation and Personality

   d) There is a positive relationship between interest profile elevation and Openness.
   e) There is a negative relationship between interest profile elevation and Neuroticism.
   f) There is no relationship between interest profile elevation and Conscientiousness, Extroversion, or Agreeableness.

A correlation matrix, linear regression, step-wise regression, and MANOVA were used to explore the relationship between interest profile elevation and personality. Results from these
analyses depicted some direct relationships that exist among interest profile elevation, Extroversion, Openness, and Conscientiousness. In addition, it was shown that only Conscientiousness and Openness could significantly predict any variance in interest profile elevation. The statistical analyses illustrated that Openness and Conscientiousness explained 22% of the variability in interest profile elevation.

To further explore the relationships among interest profile elevation and personality, the five personality scores were split into quartiles with respect to interest profile elevation. A MANOVA was used to analyze this data. The result of this analysis signified that the means of all the groups set into quartiles were not the same. Subsequent univariate ANOVA revealed that the only statistically significant differences existed among the Openness quartiles. Specifically, the highest quartile was significantly different from the other three quartiles. This indicates that when a person has a higher interest profile elevation score, they are likely to be more open.

In an effort to detect a linear or quadratic nature of interest profile elevation in relation to personality, orthogonal contrasts were conducted. This analysis revealed that Openness had both a linear and quadratic nature with relation to interest profile elevation. In addition, the orthogonal contrast showed that Conscientiousness had a statistically significant quadratic nature.

The results of these analyses lead to the following conclusions with regard to each hypothesis:

a) There is a positive relationship between interest profile elevation and Openness.

This hypothesis was supported based on the positive correlation found between Openness and interest profile elevation, the significant contribution to the variability that Openness made to the regression model, the significant findings when Openness means were split into quartiles and analyzed in a MANOVA, and the linear and quadratic nature of Openness in the orthogonal contrast.

b) There is a negative relationship between interest profile elevation and Neuroticism.

This hypothesis is rejected due to no statistically significant relationship found between interest profile elevation and Neuroticism throughout any of the analyses conducted in this domain. As will be discussed later in this chapter, it is contemplated that this hypothesis may have been supported if a fuller range of profile elevation had been found in this sample.

c) There is no relationship between interest profile elevation and Conscientiousness, Extroversion, or Agreeableness.
This hypothesis was both supported and rejected. There was no relationship found between interest profile elevation and Agreeableness. Therefore, this portion of the hypothesis was supported. The statistical analyses revealed a statistically significant correlation between Extroversion and interest profile elevation. Based on that information, this portion of the hypothesis was rejected. Conscientiousness was statistically significantly related to interest profile elevation in the correlation matrix, regressions, and orthogonal contrasts. Every analysis but the MANOVA showed some relationship between these variables. Therefore, this portion of the hypothesis was rejected.

Hypotheses for Domain 2: Interest Profile Elevation and Interest Secondary Constructs

  g) There will be a positive relationship between interest profile elevation and consistency.
  h) There will be no relationship between interest profile elevation and differentiation, congruence, or coherence.

A correlation matrix, linear regression, and step-wise regression were used to explore the relationship between interest profile elevation and the interest secondary constructs. The analyses revealed some relationships among interest profile elevation and interest secondary constructs. Interest profile elevation was positively correlated with differentiation high-low and consistency. Differentiation Iachan was inversely correlated with interest profile elevation. Also, the two measures of differentiation were highly, positively correlated with one another.

The linear regression revealed that differentiation high-low, differentiation Iachan, and consistency all account for statistically significant variance in interest profile elevation. The subsequent step-wise regression model revealed that these three interest secondary constructs accounted for 21.7% of the variability in interest profile elevation.

The results of these analyses lead to the following conclusions with regard to the following hypotheses:

  d) There will be a positive relationship between interest profile elevation and consistency.

All analyses lead to supporting this hypothesis. Consistency was shown to be positively related to interest profile elevation in the correlation matrix and to account for statistically significant variance in both regression models.

  e) There will be no relationship between interest profile elevation and differentiation, congruence, or coherence.
This hypothesis was both supported and rejected. There was no evidence in the analyses conducted that coherence or congruence was related to interest profile elevation; therefore, this portion of the hypothesis was supported. Both measures of differentiation (high-low and Iachan) were correlated with interest profile elevation as shown in the correlation matrix. They were also found to account for statistically significant variance in both regression models. Based on this evidence, the differentiation portion of this hypothesis was rejected.

_Hypothesis for Domain 3: Interest Secondary Constructs and Personality_

  g) There will be no relationship between interest secondary constructs (consistency, congruence, coherence, and two measures of differentiation) and personality (Openness, Conscientiousness, Extroversion, Agreeableness, and Neuroticism).

A canonical correlation was used to explore the multivariate relationship among interest secondary constructs and personality. The first canonical root was significant. Differentiation high-low (from set one) and Conscientiousness, Agreeableness, and Extroversion (from set two) accounted for 20% of the variance in the first root. This root was labeled maturity due to the typical characteristics of people who are associated with or score high on these variables. These results led to a rejection of the hypothesis because there was some relationship found among the interest secondary constructs and personality.

_Discussion of Results_

The findings summarized in this section are organized into the three domains used to organize this entire study. Each domain includes a discussion of and comparison to the relevant literature originally presented in chapter 2. Each section also includes speculations regarding deviations from previous findings and rationale for results in the current study.

_Domain 1: Interest Profile Elevation and Personality_

In this study, interest profile elevation was related to the personality variables of Extroversion, Openness, and Conscientiousness. The continued significant findings with relation to Openness (Fuller, Holland, & Johnston, 1999; Gottfredson & Jones, 1993; Holland, Johnston, & Asama, 1994) seem to support the ideas L. Gottfredson stated in 2002. “Individuals who are more active, imaginative, self-confident, or ‘open to experience’ (one of the big five personality dimensions) tend to sample more of the possible experience that a culture provides. Individuals who are chronically passive, pessimistic, or fearful or who for other reasons have less taste for exploring, experimenting, and deviating from the crowd will end up sampling less of what life
offers and of what they could be” (L. Gottfredson, 2002, p. 127). L. Gottfredson’s descriptions are similar to descriptors of high and low interest profile elevation individuals, and she seemed to ask for an empirical study involving these concepts.

G. Gottfredson and Jones (1993); Holland, Johnston, and Asama (1994); and Fuller, Holland, and Johnston (1999) also found some relationships among interest profile elevation, Extroversion, Openness, and Conscientiousness. In G. Gottfredson and Jones, Extraversion, Openness, and Conscientiousness were positively related to men’s interest profile elevation. They found that interest profile elevation was also related positively to Agreeableness for men and negatively to Neuroticism for women. This highlights the idea that separating the sample by gender may have led to more significant findings in the current study. Perhaps neuroticism would have been significantly related to interest profile elevation as hypothesized if the range of the sample had been greater and it had been analyzed by gender. In addition, it may have been revealed that the personality factors that were significantly related to interest profile elevation in the current study may have been significant for only one gender.

Holland, Johnston, and Asama (1994) found results more similar to the current study. Their results showed that Extroversion and Openness were positively related to interest profile elevation for men and women. They also found Conscientiousness positively related to interest profile elevation for men. The other statistically significant result they reported included an inverse relationship between interest profile elevation and Neuroticism for men. The study’s Domain 1 was most similarly designed to that of Fuller, Holland, and Johnston (1999), who reported significant relationships between interest profile elevation, Extraversion, and Openness for men and women. They also found an inverse relationship between interest profile elevation and neuroticism for men.

As is evident in the comparison of these studies with the current study, many findings were similar and a theme of an inverse relationship with Neuroticism emerges in each of the three studies. It is hypothesized that similar results for Neuroticism may have appeared in this study had the full range of interest profile elevation existed in the sample or if the sample had been analyzed by gender. The current study seems to support the consistent findings that Openness is positively related to interest profile elevation as found in each of the other three studies. It also adds further evidence that the Conscientiousness is positively related to interest profile elevation. Unlike the other significant variables in the current study, only two of the prior
studies, Gottfredson and Jones (1993) and Holland, Johnston, and Asama (1994), found that Conscientiousness was related to interest profile elevation. The relationship between interest profile elevation and Extraversion was weak in this study but consistent with the findings in all three previous studies.

**Domain 2: Interest Profile Elevation and Interest Secondary Constructs**

In this study interest profile elevation was significantly correlated with the two measures of differentiation and consistency. These three secondary constructs also account for 21.7% of the variance in interest profile elevation.

This review of the literature found no studies focused on researching the relationship among interest profile elevation and interest secondary constructs. Yet, a few included secondary constructs as variables that were not the focus of their study on interest profile elevation. Swanson and Hansen (1986) found that consistency was significantly higher among high, undifferentiated profiles. Although their definition of profile elevation was confounded with differentiation, their results are interesting when compared to the current study.

One of the more interesting findings of the current study is that the two measures of differentiation were correlated at .651. Interest profile elevation was positively correlated with differentiation high-low at .177 and inversely correlated with differentiation Iachan at -.204. Gottfredson and Jones (1993) had a similar finding. In their study, the two measures of differentiation were correlated at .74 for men and .69 for women. Interest profile elevation was positively correlated with differentiation high-low at .32 for men and .60 for women. Interest profile elevation was inversely correlated with differentiation Iachan at -.13 for men and .08 for women.

Gottfredson and Jones (1993) used a sample of seventh-grade students, Navy recruits, and bank tellers in their analyses of interest profile elevation and the two measures of differentiation. The seventh-graders in the sample were administered the SDS. The Navy recruits and bank tellers were given the VPI. Therefore, there was a difference in how the current study and Gottfredson and Jones measured interest profile elevation and differentiation. In addition, the Gottfredson and Jones sample differed from the university student sample in the current study. Despite the differences in the studies, the findings were very similar other than two notable differences. First, Gottfredson and Jones found stronger positive correlations between interest profile elevation and differentiation high-low than the current study. Second, Gottfredson and
Jones found a negative correlation between interest profile elevation and differentiation Iachan for men and a weak, positive one for women. The current study found a negative correlation between these variables. The differences between the findings demonstrate a reason to further explore these variables with gender included in future analyses.

The current study explored differentiation further by entering the two measures and consistency into a regression model. A unique aspect of these results included the amount of variance accounted for in the first two levels of the stepwise regression. The first step involved the entering of differentiation Iachan, which was the variable accounting for the most variance in the initial linear regression model. In the first step, differentiation Iachan accounted for less than 4% of the variance. When differentiation high-low was entered in the second step, the two measures of differentiation accounted for 20% of the variance in interest profile elevation. It is very unique that the first variable entered into the stepwise model does not account for the most variance. It appears when the two measures of differentiation were combined to explain the variance in interest profile elevation, they explained more than the sum of the two measures.

It is speculated that one measure of differentiation is a better predictor of high interest profile elevation and the other of low interest profile elevation. When combined, the two measures predict a larger part of the interest profile elevation continuum. In exploring the reasoning behind these unique results regarding differentiation, it may help to review how the two measures are calculated. Differentiation high-low is calculated by subtracting the lowest summary score from the highest (Holland, 1997). Differentiation Iachan takes into account the first, second, and fourth summary scores when calculating differentiation (Iachan, 1984). It is considered to be more sensitive to the shape of the profile (Holland, Powell, & Fritzshe, 1994). The score associated with the first letter in a person’s Holland code is the only number the two measures of differentiation both use to calculate the differentiation score. Differentiation high-low is taking into account the extreme low and extreme high of a person’s profile. Whereas, differentiation Iachan is not taking into account the extreme low of a profile. Perhaps this is where some of the differences in their relationship to interest profile elevation exist. An additional idea is that differentiation Iachan is explaining the middle portion of a profile, and differentiation high-low is explaining the extremes. Because both measures utilize the highest score of the profile, this would explain why they are positively related. Because the remainder of
the scores used to calculate the two measures of differentiation are not the same, this would explain why they account for unique and additional variance in interest profile when combined.

Another reason for the unique findings in the study may have to do with the level of the correlation between the two measures of differentiation. In the *SDS Professional User’s Guide’s normative sample* (Holland, Powell, Fritzsche, 1994), differentiation high-low and differentiation Iachan are correlated at .88. In the current sample of university students in a career course, the two measures of differentiation are correlated at .65. Perhaps the way that the two measures of differentiation are correlated with and account for variance in interest profile elevation is explained by the current sample that is comprised of those seeking career assistance. With the lower correlation level between the two measures in this sample, the difference between the two measures may have left more room for each measure to account for unique variance in interest profile elevation.

Gati (1985) proposed the idea of crystallization as it relates to interest secondary constructs. Interest crystallization was defined as “the extent to which a counselee’s occupational preferences reveal a clear tendency toward a particular field or group of adjacent fields” (Gati & Blumberg, 1991, p. 356). Interest crystallization addressed the interest secondary constructs of differentiation, consistency, and identity at one time through one measure (Gati & Blumberg, 1991). Gati (1985) and Gati and Blumberg (1991) noted that Holland’s measures of differentiation high-low and consistency only take into account two scores of the profile. He mentioned that the Iachan index provides a partial solution to this problem. Yet, his measure of crystallization of a profile accounts for all scores in an interest profile. He believed this fuller explanation of a person’s interest profile, the crystallization measure, is a better way to determine the consistency and differentiation of one’s interests. Perhaps when the two measures of differentiation (Holland and Iachan) are combined they are becoming similar to Gati’s measure of crystallization by explaining the whole interest profile. This could help to explain why the two measures of differentiation accounted for more of the variance in interest profile elevation when combined than the sum of them separately. It may also provide part of the explanation regarding the directional differences the two measures have when correlated with interest profile elevation.

The combination of the ideas of Gati’s crystallization, findings of the current study, and findings of Gottfredson and Jones (1993) show the need to further understand the relationship
between the measures of differentiation and how they relate to interest profile elevation. It was past the scope of this study to further examine this relationship.

**Domain 3: Interest Secondary Constructs and Personality**

A canonical correlation showed that these two data sets, interest secondary constructs and personality, converged to explain 20% of the variance in a significant canonical root that was labeled maturity. Before exploring the relevant literature, it will be helpful to repeat some of the characteristics associated with the variables that gave practically significant contributions to the significant canonical root. These variables were differentiation high-low, Extroversion, Agreeableness, and Conscientiousness. Differentiation of an SDS profile indicates that one’s characteristics or work preferences more strongly resemble their code than one with a less differentiated profile (Reardon & Lenz, 1998). It is often said among career counselors that a person with high differentiation has more mature interests (i.e., he or she has taken the time and had the experiences to confirm his or her likes and dislikes).

A high score on Extroversion indicates that one is assertive, active, and talkative. Items on the NEO-FFI (Costa & McCrae, 1992) that measure Extroversion include: “I am a cheerful, high-spirited person” and “I am a very active person.” A high score on Agreeableness indicates one that is altruistic, sympathetic, and eager to help. Items on the NEO-FFI that measure Agreeableness include: “I would rather cooperate with others rather than compete with them” and “Most people I know like me.” A high score on Conscientiousness indicates one that is a planner and organizer that tends to complete their tasks. Items on the NEO-FFI that measure Conscientiousness include: “I’m pretty good about pacing myself so as to get things done on time”, “I have a clear set of goals and work toward them in an orderly fashion”, and “When I make a commitment, I can always be counted on to follow through.”

Three studies focused on the relationship between interest secondary constructs and personality as measured by the NEO. Kieffer, Schinka, and Curtiss (2004) and Furnham, Toop, Lewis and Fisher (1995) included the five NEO factors, consistency, differentiation, and person-environment congruence in their studies. The only significant findings related to person-environment congruence, which was not the way the congruence variable was defined in the current study. Holland, Gottfredson, and Baker (1990) hypothesized that Neuroticism as measured by the NEO-PI would be negatively related to coherence. They did not find statistically significant results.
Several studies explored the interest secondary constructs relationship to other variables that were not measured by the NEO. These variables are represented in Table 2. As can be seen in Table 2, several of the variables seem to be consistent with the definition of Conscientiousness, such as organizational commitment (related to congruence; Pazy & Zin, 1987) and persistence in college (related to consistency; Wiley & Magoon, 1982; Barak & Rabbi, 1982). Other studies not represented in the table, due to lack of significant findings, have also researched Conscientiousness-like variables in relation to interest secondary constructs. Frantz and Walsh (1972) explored congruence, consistency, and differentiation’s relationship with satisfaction and achievement in college. No one construct was significant; but when all three were combined, they were significantly related to satisfaction and achievement. Ohler, Levinson, and Hays (1996) explored the relationship among consistency, congruence, differentiation, and career maturity but found no statistically significant relationship among these variables.

The combination of the ideas posed in these studies indicates an interest in exploring the relationship between personality and interest secondary constructs. Perhaps the use of a canonical correlation to explore this relationship will add to the literature and scientific understanding in this area.

In this section the findings of the current study have been discussed in relation to the literature reviewed in Chapter II. In addition, speculations have been offered in an attempt to explain the particular findings of the study.

**Limitations**

There are several limitations relevant to the study’s internal and external validity. The limitations included are related to the population, range of interest profile elevation, and software needs.

*Population*

As mentioned, the sample used in this study was from an undergraduate career course that was majority Caucasian. This limits the generalizability of this study to similar groups. This sample better resembles the typical college student seeking career-related assistance than many of the other similar studies. Yet, the findings of this study should only be generalized to university students seeking career-related assistance.
Range of Interest Profile Elevation

There are two issues relevant to the range of interest profile elevation measured in this sample. One issue involves the lack of extremely high interest profile elevation scores. The second issue involves the restricted range of those scores falling in the medium-low and medium-high interest profile elevation quartiles.

There is a possible high score on interest profile elevation of 314, and the highest score in this sample was 240. There were only two scores that would fall into the highest quartile of interest profile elevation if the quartiles were based on the full range of the construct. Therefore, the quartiles in this study were based on the range of interest profile elevation in the sample. Because of this, scores lower than what were theorized as “high” interest profile elevation scores were included in the high quartile. If more extremely high interest profile elevation scores had been obtained in this sample, the results may have varied from those presented in Chapter IV. For example, perhaps the hypothesis that Neuroticism was inversely related to interest profile elevation would have been supported in a sample with a fuller range of interest profile elevation scores. Yet, restricted range may be a function of a sample that is seeking career assistance. Perhaps this type of sample would have fewer likes and less confidence in abilities. This scenario would lead to lower interest profile elevation scores on the Self-Directed Search.

The second issue of restricted range is an unavoidable limitation to this study. The two middle quartiles of interest profile elevation were restricted in how large a range they could encompass. The low and high quartiles were able to adjust to the interest profile elevation scores found in the sample. In other words, the medium-low and medium-high quartiles had a range of interest profile elevation of 111-132 and 133-152, respectively. The ranges of these middle two quartiles were based on the full range of the sample and were restricted based on how high and low the interest profile elevation scores were that the sample provided. The high and low interest profile elevation ranges had to first be decided based on the range of scores the sample provided. The middle quartiles had to fit into what was left of the range.

Software Needs

The final limitation is both a limitation and strength of this study. All interest secondary construct and summary scores were calculated using the Self-Directed Search Professional Summary software (Reardon & Par Staff, 2001). This poses a limitation on the study because anyone wanting to exactly replicate the study’s procedures would need access to this
Professional Summary software. It is a strength of the study because it helped to reduce error by providing a non-human, consistent calculation for all interest secondary construct and summary scores.

Implications for Counseling

In this section, findings of the study are reviewed in how they may inform the counseling practice and a short case study is discussed. As stated in the first chapter, a problem in the field of counseling is that assessments are often interpreted in ways that are not consistent with research (Fuller, Holland, & Johnson, 1999) and interest profile elevation is often interpreted under the umbrella of counselor judgment (Gottfredson & Jones, 1993). This study was originally posed in order to provide some empirical support for the interpretation of interest profile elevation. Previous studies, which were reviewed in Chapter II, have shown some correlates of interest profile elevation that may aid a counselor in more accurately interpreting this SDS construct. The results of the current study have also provided support for some of those findings and added additional information concerning interest profile elevation.

Findings of the Study

Counselors that utilize the NEO in conjunction with the SDS are likely to find the results of the current study relevant to their practice. Results of the current study found Extroversion, Openness, and Conscientiousness positively related to interest profile elevation. These relevant personality factors help to paint a picture of a client with high or low interest profile elevation. According to the relationships found with personality, a counselor with a client that scores in the high interest profile elevation range should expect to see an outgoing, hard worker who is willing to consider various career options. If a counselor determines that a client’s interest profile elevation is in the lower range, the counselor should be prepared to encounter a quiet, close-minded person who does not tend to set or meet most goals.

The findings relevant to interest profile elevation and interest secondary constructs are also important to counselors utilizing these aspects of the SDS in their interpretation. In the current study, interest profile elevation was related to differentiation high-low (positively), differentiation lachan (inversely), and consistency (positively). It is difficult to interpret the counseling implications related to the positive and inverse correlations that interest profile elevation shares with differentiation. Yet, the relationship with all three secondary constructs is interesting. These constructs share some variance but also help to explain different aspects of a
person’s career interest profile. It shows that there is some importance in interpreting interest profile elevation because it is giving the counselor some relevant but unique information.

Case Example

In the *Self-Directed Search Professional User’s Guide* (Holland, Powell, & Fritzsche, 1994), several short case studies are presented. Only the client’s scores for each section of the SDS are shown. No information is given concerning interest secondary construct scores. Yet, interest profile elevation can easily be calculated with the information given. The information from one of these case studies will be used to demonstrate how interest profile elevation could be used when interpreting these examples of SDS profiles.

Person H is a 20-year old man with an interest profile elevation of 185. This is in the higher range for interest profile elevation. If a counselor were aware of this information early in working with H, the counselor could be aware of a few things. Because of the strong relationship shown in the current study between interest profile elevation and Openness, the counselor could expect this person to be open to considering several career options. The counselor may want to assure that the client is not overwhelming himself with too many options or an overabundance of information. Based on interest profile elevation’s positive relationship with Conscientiousness, homework that is given to the client will likely be completed as instructed and would probably serve as a good intervention with this person. Interest profile elevation’s moderately positive relationship with Extroversion provides some evidence that this client may be easy to talk with and active in their approach to career information seeking, e.g., information interviews, networking.

The case of Person H helps to demonstrate how this and future research relevant to interest profile elevation may aid a counselor in their work with a client seeking career assistance. It is important to remember that with a client scoring in the low range of interest profile elevation, the implications of the current study would paint a different picture of the client and the way in which a counselor may work with that client.

*Recommendations for Future Research*

The results and discussion of the current study have highlighted several areas for research that could be addressed in future studies. These research areas relate to replication of the study and other potentially relevant variables.
Replication of the Study

There are three reasons that replication of this study or similar studies would be important for the development of the science related to interest profile elevation. These reasons are: 1) need for a sample that includes a broader range of interest profile elevation scores; 2) to learn more about the two measures of differentiation and how they explain the full range of interest profile elevation; and 3) to create norms for interest profile elevation.

As mentioned, the current sample did not have an adequate number of extreme high interest profile elevation scores. This prevented the researcher from creating the quartiles used in the study based on the full range of interest profile elevation. The study was limited to putting the range of interest profile elevation found in the sample into quartiles. This study could be replicated with a larger sample that could more likely provide that range. This may lead to findings more consistent with some of the hypotheses posed in this study, such as interest profile elevation’s inverse relationship with Neuroticism.

As is evident from the discussion of the findings relevant to the two measures of differentiation, there is a need to further explore why these unique results have occurred. Replication of the current study to determine if the same results occur in a similar but different sample is important. If the results are replicated, further studies could be designed to determine why these unique results have occurred among the measures of differentiation and interest profile elevation. This may help to further explain the exact relationship that interest profile elevation has with the well established interest secondary constructs on the SDS.

If interest profile elevation is to be widely used among practitioners, norms need to be developed. To create norms for a college student population, a varied sample of university students needs to be taken. The current study was limited to a large, southeastern university sample of students seeking career-related assistance. A study used to create a normative sample should include multiple types of colleges and students that may or may not be seeking career assistance.

Potentially Relevant Variables

There are a wide variety of variables that could have a relationship with interest profile elevation. There are several of particular interest to this researcher. They include: NEO-PI-R facet scales, energy, depression, and aspects of the Cognitive-Information Processing Approach.
**NEO-PI-R facet scales.** The instrument used to measure personality in this study was the NEO-FFI. This is a shortened version of the NEO-PI-R (Costa & McCrae, 1992). Unlike the shortened version, the NEO-PI-R provides information on several smaller facet scales that are subsumed under the five main factors. A future research study could use the NEO-PI-R to measure personality and look for relationships among the facet scales and interest profile elevation.

**Energy.** Profile elevation may be a measure of a broader construct than previously speculated. Darcy and Tracey (2003) proposed the existence of a general factor of interest as exists with intelligence. They state that profile elevation may be related to or at least have an impact on the general factor of interests. This author proposes that profile elevation on an interest inventory may be a measure of the energy one focuses toward career concerns.

As a matter of speculation, let us pose that people have an overall life energy level that is similar to a level of intelligence. This energy level is relevant to many areas of life, as intelligence has been shown to be (Kuncel, Hezlett, & Ones, 2004). There are tools that are said to measure the general factor of intelligence (Sattler, 2001). What if there are tools that could measure a general factor of interest dubbed energy?

The five-factor model as operationalized by the NEO-PI-R may provide a more general measure of a person’s energy. The definition of the Extraversion construct includes terms such as energetic and active. The Activity facet encompassed by the Extraversion construct includes the descriptor, sense of energy, in reference to a high scorer (Costa & McCrae, 1992). A client’s normative scores on these NEO scales may provide a counselor with information about a client’s overall energy level. This could then be compared to the client’s profile elevation scores to determine how their energy level related to career concerns compares to their overall energy level. The 9 scale on the MMPI-2 could also be considered an energy scale and could be used to measure this energy construct in much the same way as the NEO’s Extroversion scale (Butcher & Williams, 2000).

**Depression.** Several researchers and theorists have suggested that low interest profile elevation may be positively related to depression and that this relationship should be empirically explored (Fuller, Holland, & Johnston, 1999; Gottfredson & Jones, 1993; Holland, Johnston, & Asama, 1994; Spokane, Luchetta, & Richwine, 2002). The earlier suggestion to explore the relationship among NEO-PI-R facet scales and interest profile elevation would be one way to
research this idea. Neuroticism has a facet scale labeled depression. The MMPI-2 also has a depression scale that could be used. Perhaps a common, reliable, and easy to administer measure of depression would be the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). Any or all of these measures of depression would aid in exploring an important potential correlate of interest profile elevation.

The Cognitive-Information Processing Approach. The main goal of the Cognitive Information Processing Approach (CIP approach; Peterson, Sampson, Lenz, & Reardon, 2002; Sampson, Reardon, Peterson, & Lenz, 2004) is to provide a framework through which a trained professional can aid others in making a current career choice while also improving upon basic problem-solving and decision-making skills. This approach describes a decision-making model called the CASVE cycle. A possible correlate of interest profile elevation is the speed through which one moves through the CASVE cycle. If a counselor is expecting the client to navigate the CASVE cycle, it may be helpful to know if the client may go about this cycle at a slow, average, or quick speed. It is worth understanding whether a profile elevation score could inform a practitioner in this way. The practitioner that uses both Holland’s interest inventories and the CIP approach in their work with clients would likely find several empirical explorations of the constructs within these two theories helpful in his or her practice.

Conclusion

This study examined the relationship among interest profile elevation, personality, and interest secondary constructs. The empirical look at these variables was conducted because of a need to better understand the construct of interest profile elevation and the full relationship among all of these variables.

There were interesting results within each of the three domains presented in this study. In domain 1, it was found that interest profile elevation was related to Extroversion, Openness, and Conscientiousness. The latter two variables also explained statistically significant variance in interest profile elevation. In domain 2, it was found that interest profile elevation was related to differentiation high-low, differentiation Iachan, and consistency. These variables also explained statistically significant variance in interest profile elevation. The two measures of differentiation were related to interest profile elevation in opposite directions and appeared to account for unique variance in the construct. In domain 3, differentiation high-low, Conscientiousness, Agreeableness, and Extroversion accounted for 20% of the variance in a root labeled maturity.
Chapter V included a summary of results, a discussion of the study’s results, an examination of the study’s limitations, and provided implications for practice and further research. Through this, it is evident that the current study provided important information that will further the science in the field of counseling psychology. In addition, the empirical relationships among interest profile elevation, personality, and interest secondary constructs provide some interesting implications for counselors and ideas for future research.
APPENDIX A

Student Data Sheet
Name___________________________________________________

Date_______________________

Soc. Sec. No._________________________________        Expected Graduation

Date_____________________________________

FOR QUESTIONS 14-15 AND 18-25, PLACE THE NUMBER IN THE SPACE IN THE
RIGHT MARGIN WHERE INDICATED:

1. Major (print major or “undecided”) ________________________________

2. Advisor (Name).____________________________________________________

3. Campus Address.____________________________________________________________

___________________________________________________________

4. Local Telephone……..

____________________________________________________________________

5. E-mail Address……...

____________________________________________________________________

6. Permanent
   Address…….._______________________________________________________________

____________________________________________________________________

7. Are you active in campus organizations? Which?

____________________________________________________________________

____________________________________________________________________

8. Outline your previous employment or work experience.

____________________________________________________________________

____________________________________________________________________

9. How did you learn of this course?

____________________________________________________________________

____________________________________________________________________
10. What are your objectives in taking this course?
____________________________________________________________________________
____________________________________________________________________________
11. Number of Hours This Semester…………………………………………………………
12. Age (in years)………………………………………………………………………………
13. Sex (1=Male  2=Female)………………………………………………………………
14. Ethnic Group (write in number)…………………………………………………………
   1. American Indian  5. Caucasian
   2. Asian-American  6. Other
   3. African-American  7. Prefer not to respond
   4. Hispanic-American
15. Year in school (write in number)…………………………………………………………
   1. Freshman  4. Senior
   2. Sophomore  5. Graduate Student
   3. Junior  6. Other
16. List all the occupations you are considering right now.
_____________________ ____________________ ____________________
_____________________ ____________________ ____________________
17. Which occupation is your first choice? (If undecided, write “undecided.”)
________________________________
18. How well satisfied are you with your first choice? (write in number)………………18.__________
   1. Well satisfied with choice
   2. Satisfied, but have a few doubts
   3. Not sure
   4. Dissatisfied and intend to remain
   5. Very dissatisfied and intend to change
   6. Undecided about my future career
Mark a rating number from \( \textbf{1} \) (Strongly Disagree) to \( \textbf{7} \) (Strongly Agree) that best responds to items 19-25.

19. Decisions about my career tend to directly affect my health……………………………………________

20. Decisions about my career create a great deal of tension………………………………………..________

21. I have felt fidgety or nervous as a result of having to make career decisions……………………________

22. If I did not worry about my career, my health would probably improve…………………………________

23. Problems associated with my career decisions have kept me awake at night……………………..________

24. I have felt nervous before attending classes that made me think about my career………………..________

25. I often think about my career even when I am doing other things………………………………...________
APPENDIX B

Human Subjects Informed Consent and Approval Letter
INFORMED CONSENT

I consent to be a participant in the research project entitled "The Relationships Among Personal Characteristics, Career Thinking, Coping Behaviors, Career Interests, and Communication Apprehension." This research is being conducted by two graduate students under the direction of Professor Robert Reardon in the Department of Educational Psychology and Learning Systems in the College of Education at Florida State University. The purpose of the study is to examine the relationships among career interests, communication apprehension, personal characteristics, career thinking, and how students cope with the stress of making career decisions.

The procedures of the study are: You will be asked if you are willing to complete five different paper-based assessments about your career interests, attitudes about communication, personal characteristics, your thoughts related to your career decision-making, how you are coping with your career decision-making, and a demographic form. Completion of these forms should take about 30-45 minutes. The name field on the five assessments will be blocked out and each identified with a number only. Copies of the class demographic forms will be made for the researcher. The demographic forms and these consent forms will be stored separately from the questionnaires.

Information obtained during the course of the study will remain confidential, to the extent allowed by law. Your responses to the questionnaires, demographic form, and consent form will be stored out of public view and under the control of the principal investigator and/or faculty advisor. The results of the research study may be published, but your name will not be used, and the results will be presented in group format only.

The discomforts and risks reasonably to be expected by participation in this project is as follows: You may become more aware of personal characteristics that relate to career decision-making, career interests, attitudes about communication, and coping with stress. If these questions raise career or personal issues, the Career Center (850-644-6431) and the Counseling Center (850-644-2003) are two places where you can go to talk about these types of concerns. A potential benefit reasonably expected from participation is that you will help contribute to a better understanding of factors influencing career decision-making. This information has the potential to improve the ability of counselors and advisors to address issues that may interfere with students' career problem-solving and decision-making, and potentially to help students improve their skills and knowledge in this area. You may also expect this information to assist the course instructors to address the career decision-making needs of students in future sections of the SDS 3340 course.

Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. Your participation or lack thereof will not affect your grade in this course.

(Participant)                                 (Date)
APPNOVAL MEMORANDUM

Date 5/26/2005

To
Emily Bullock
1518 Valley Road
Tallahassee, FL 32301

Dept EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS

From Thomas L. Jacobson, Chair

Re Use of Human Subjects in Research
A study of interest profile elevation, personality, and interest secondary constructs.

The forms that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Secretary, the Chair, and two members of the Human Subjects Committee. Your project is determined to be Exempt per 45 CFR § 46.101(b)(4) and has been approved by an accelerated review process.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If the project has not been completed by 5/24/2006 you must request renewed approval for continuation of the project.

You are advised that any change in protocol in this project must be approved by resubmission of the project to the Committee for approval. Also, the principal investigator must promptly report in writing any unexpected problems causing risks to research subjects or others.

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department and should review protocols of such investigations as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Protection from Research Risks. The Assurance Number is IRB00000446

Cc Robert Reardon
HSC No. 2005384
APPENDIX C

SDS Professional Summary
The Self-Directed Search Professional Summary

Client Name: (not specified)
Client ID: (not specified)
Reference Group: College
Age: (not specified)
Gender: Female
Education: 16
Test Date: 05/19/2003

SDS Scores:

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Summary Scores: 24 22 28 17 8 11
Percentiles: 87 64 72 7 5 15

OF Selection Codes: ARI, AIR, RAI, RJA, IAR, IRA

Diagnostic Signs:

Congruence: Average (Iachan Index = 14)
Summary Code: ARI
Aspirations Summary Code: IAS
Coherence of Aspirations: Average
Consistency: Average
Differentiation: Average (Iachan Index = 3.75)
Commonness: Average

Aspirations Listed:

- Biologist
- Exercise Physiologist
- Dancer
- Actor
- Physician, Occupational

Aspirations Summary Code: IAS
REFERENCES


BIOGRAPHICAL SKETCH

Emily E. Bullock pursued her doctoral work in the Combined Program in Counseling Psychology and School Psychology at Florida State University in Tallahassee, FL. She emphasized counseling psychology and specialized in career counseling. Her Master of Science degree in Counseling Psychology and Bachelor of Arts degree in Psychology were completed at the University of Southern Mississippi in Hattiesburg, MS. She also completed an Associate of Arts from East Central Community College in Decatur, MS. Currently, Emily E. Bullock is working as a pre-doctoral intern at Mississippi State Hospital in Whitfield, MS.